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# FARM RECORDS AND ACCOUNTS

J. Norman Efferson

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PRINCIPAL, TRAINING CENTRE FOR VILLAGE GUIDES
10 FEB 1955
GANDHIGRAM

John Wiley & Sons, Inc., New York
Chapman & Hall, Limited, London

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SECOND PRINTING, NOVEMBER, 1951

Printed in the United States of America

# PREFACE

Business judgment has been defined as about three-fourths arithmetic and one-fourth natural ability. Business success in agriculture depends on the ability to apply this mathematical skill and natural aptitude for the complicated business of farming. In the long run, financial success in farming depends on the capacity to spend a little less than is earned. Adequate farm records will help to plan such a spending program and will supply the necessary facts for the application of farm management skills in developing a more efficient and profitable farm.

The purpose of this book is to present an outline of the major systems of farm records and accounts needed by farmers, to indicate the conditions under which each of the different types of records and accounts should be used, to demonstrate the practical problems involved in keeping the records and summarizing the results, and to point out the many uses of these records after the facts have been assembled. This is not a book on accounting or double-entry bookkeeping; it is based on the assumption that most farmers and students of agriculture do not have and do not need technical accounting training in order to be able to keep and use the records that are adapted to their needs. The book is designed primarily for students of agriculture in technical schools, vocational high schools, junior colleges, and colleges, and for farmers who have no special bookkeeping training or experience.

The chapters have been arranged in a logical sequence based on the different needs and accounting capabilities of various groups of farmers so that any specific individual or group may concentrate on the keeping and using of farm records which fit the needs and desires of that individual or group without having to cover all the other types of records. The subject matter is arranged in order from the simplest records and accounts to the more complex types. The eighteen chapters are organized to fit

the usual eighteen-week three-hour beginning course in farm records and accounts.

Each chapter is accompanied by a practical exercise in which are demonstrated the principles and methods discussed in the chapter. These exercises are sufficiently broad in type and application so that they may be used in any agricultural region. In some cases, however, instructors may desire to substitute local material. Each exercise is a separate unit, and this substitution can be made without breaking the continuity of the chapter or the general outline of the book. These exercises are designed as laboratory experience to emphasize the important factors brought out in the discussion and to give the students practice in keeping and using the records studied.

The author has followed the general point of view and some of the methods of organizing and teaching material that have been developed in the Department of Agricultural Economics at Cornell University under the leadership of the late G. F. Warren and P. S. Williamson, and W. I. Myers, F. A. Harper, and others.

The method of approach and the laboratory exercise demonstrations have proved their effectiveness over a period of twelve years in the author's classes and in extension work with farmers on farm-record problems. It is sincerely hoped that the material will prove equally valuable to other teachers, students, and farmers.

J. NORMAN EFFERSON

*Baton Rouge, Louisiana*
*September 1949*

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CHAPTER 1

# Introduction

Any farm record or account is simply another farm tool. This tool is maintained, completed, and used for the same purpose that any other item of farm equipment is used on the farm: to aid the farmer in obtaining greater profits or making larger savings in the operation of his business. A farm record which does not serve this purpose is useless.

A check on actual records and accounts kept by farmers, however, will point out that a surprisingly large proportion of the group keep but do not use their records. This appears to be the major reason why so many farmers keep so few records and know so little about the financial operations of their farm business. No farmer would think of purchasing a new tractor, driving it into the tool shed, and then allowing it to remain idle for the next ten years. And yet year after year many farmers do exactly the same thing by keeping certain farm records and accounts regularly for a period of time, filing away each year's records, and never referring to them after the last entry. Soon they lose interest and, deciding that it is easier to forget their accounts, they join many of their neighbors in declaring to the world that there is no advantage in keeping any sort of farm record or account. Actually, these same farmers would find that new tractor mentioned above equally valueless if it were not used. The farmer purchases the tractor with a definite purpose in mind: to plow more land in a shorter period of time. He should plan to maintain his record-keeping activities with the same specific objective. No farm record should be started or kept until the farmer has a definite need for the information to be assembled and a concrete use for the collected data after they have been summarized at the end of the year. There is neither glory nor

profit in record-keeping merely for the sake of keeping records. There are possible earnings per hour of work on the records much greater than the earnings from any enterprise on the farm if the records are adapted to the needs of the individual farmer and if they are used after having been assembled and summarized.

## The Purpose of Farm Records and Accounts

Farm records and accounts if properly kept and actually used will help the farmer to make greater earnings or incur smaller losses by supplying him with facts to aid him in many ways in improving the efficiency of his production and marketing operations. Some of the more important of these groups of valuable information supplied by such records are as follows:

1. *Changing Farm Practices.* Every farmer must make daily and weekly decisions as to the type and kind of farm practices to be applied in his operations. He must decide on the kind, rate, and method of application of fertilizer if it is to be used, and whether the application will or will not result in crop yields high enough to more than offset the cost of the fertilizer. He must decide whether or not to spray or to attempt other methods of controlling diseases and insect pests on certain crops and livestock; if he does so decide, he must make further decisions as to the number of times and the conditions under which these applications are to be administered. He must decide each day on the amount and kind of feed for his dairy cattle and other livestock. He must decide whether it is more profitable to purchase the more expensive certified seed or purebred livestock or to purchase those which are less expensive. He must decide whether it is more profitable to sell his crop immediately after harvesting or to store and hold it for a higher price. These and many similar farm practice decisions occur daily in the activities of all farmers. They are made on the basis of snap judgments, on the farmer's memory of what happened under similar circumstances in the past, on the suggestions of others, on the time of the moon, or on the basis of actual records of past experience over a period of years combined with an intelligent appraisal of current economic facts as they apply to the specific situation.

2. *Changing Farm Enterprises.* Every farmer must make far-reaching decisions each year concerning the organization and intensity of the different farm enterprises which comprise his farm business. He must decide annually the amount, location on the farm, and relative intensity of each of his crop enterprises and must make investments in capital and labor for many livestock enterprises at least four or five years in advance of the expected income. He must decide whether to add new enterprises such as poultry or vegetable crops to his farm business operations or to discontinue some of the major enterprises currently being maintained. He must decide the relative profitableness of producing his own livestock replacements on the farm or following the practice of purchasing all replacements. These and similar farm enterprise decisions are made in one of two ways: (*a*) haphazardly or by guesswork or (*b*) intelligently by reference to his experience on his individual farm as indicated by records and accounts of his operations in previous years and organized plans developed from this accumulated information.

3. *Weighing Values.* Very few farmers have unlimited capital and labor resources. Each day, each week, and each year there are several important alternatives for which money could be spent or work applied. The farmer continually must compare one action with another, weighing values in order to decide which purchase to make to obtain the greatest advantage with the capital available. He must prepare a schedule of the place and time for his work to produce the greatest net return. He always must ask himself the question and find the answer to his chances for obtaining a dollar or more return for the dollar spent and whether his dollar should be spent for feed, fertilizer, hired labor, or a new roof, or whether it should be saved until something more urgent develops. These decisions are made in one of two ways: by intuition or guesswork; or by reference to results from records of past experience when similar decisions were made.

4. *Providing Facts for Direct Financial Aid.* Most farmers' gross returns are of sufficient size to require the filing of income tax returns. Most farmers, sooner or later, need credit. To prepare an income tax return or to present a credit statement to the local banker, fairly reliable records of the operation of the farm are absolutely essential. A farmer who prepares his annual

income tax report by estimating his receipts and expenses almost invariably pays an income tax from 20 to 50 per cent higher than he should have paid; it is usually fairly easy to estimate the receipts since they are collected in a few large lump sums, but it is impossible to estimate the expenses for the year if there are no records to use as a guide. A farmer who estimates his financial standing for the purpose of obtaining credit at a cheap and reliable source is just as likely to obtain too little, too much, or no credit at all as he is to obtain the amount he needs and has a reasonable chance to pay back.

5. *Providing Facts for Group Action.* Farmers continually are being called upon to supply facts for local, state, and national legislative programs and for community and county improvement projects. Such facts can be obtained only from records kept by farmers in the various types of farming regions of the state and nation. Crop insurance, for instance, has been one of the long-time goals of many farm groups. In general, however, it has failed because there have not been available sufficient records of past performance in individual areas and on individual farms so that low-cost rates could be applied on farms where risks were low and the rates adjusted upward in higher-risk regions.

## Limitations in the Use of Information from Farm Accounts

Any agricultural producer who develops and maintains a system of records and accounts on his farm business in the hope that somehow these records will aid him in obtaining higher prices for his products will be sadly disappointed. Farm records, no matter how complete and accurate, are of no value in determining the selling price of farm products. After a farm commodity is produced, the supply relative to the demand for it determines the price; a farmer sells for the highest price regardless of the effect of this action on the final profit or loss from the enterprise. Over a period of years farm records will provide the farmer with a good indication of the particular commodities which will produce highest average returns on his individual farm. Farmers as a group do not continue to grow year after year any commodity which renders a loss every year, but once

the product has been grown, the price is determined by factors other than the costs of production.

In addition, the results from ordinary farm records and accounts cannot be used in the same manner as the results from the detailed accounting records of many other business enterprises. "Accounting" is an exact science which has definite and rigid rules and regulations and in most instances has only one correct method for handling any recording problem. "Farm accounting" in the usual sense, however, is an application of accounting principles to the complicated business of farming; it is an applied science using the basic principles of accounting but requiring many adjustments and estimations in the adaptation of business accounting principles to the varied and less definite operations of a series of agricultural enterprises. As a result, facts obtained from the usual farm records and accounts cannot be interpreted with the same rigidness of purpose that is used in the analysis of the more detailed double-entry accounts of many other businesses.

Farm accounting differs from business accounting in many ways. First, farms are operated usually as relatively small units on which the operator acts as the investor, the manager, and the laborer. Since the size of the usual farm business is so small, the volume of business ordinarily does not justify the employment of even a part-time bookkeeper; the farmer must keep his own records, and, as a consequence, these records must be more brief and simple than the records kept by other kinds of businesses where the volume justifies the employment of one or more full-time, well-trained accountants or bookkeepers. Yet, even though these records need to be both brief and simple, they must be devised to measure the results of the operation of a business which is more complicated than most others; although much of business accounting is developed to give only one answer—the net return to the capital invested—the complete farm account must show the return to capital, the return to labor, and the return to management.

Second, agriculture is essentially a biological industry in which many of the day-to-day changes which affect financial transactions are caused by the elements and are beyond the control of the producer. As a result, the accounting problems of the farmer

are more varied and less predictable than the usual accounting problem of the machine and its product or the sales organization with fairly definite margins.

Third, because of the fact that the operation of the ordinary farm requires large amounts of physical labor, most farmers are physically exhausted at the end of the day's work and have neither the time nor the ambition to record in at least four different places each transaction which occurred during the day, as would be necessary if the usual double-entry bookkeeping system was kept.

Fourth, in spite of the small size of the average farm business, an agricultural operation is much more complicated from an accounting standpoint than most other business operations. A large retail grocery store employing six to ten workers will have four or five different departments on which accounting controls are needed—the meats section, the fruit and vegetable section, the canned goods section, the bulk foods section, and the non-foods section. In contrast, a small farm employing only one full-time operator will need records on at least thirty different departments if the same degree of accounting controls is to be established. He will need profit-and-loss accounts on each enterprise from which a monetary return is expected, including corn, potatoes, beans, tree fruits, berries, hay, oats, and other crops; dairy cattle, hogs, poultry, and other livestock; and many service accounts such as cropland, pasture, woods, fences and drains, farm buildings, and others. Many businessmen have expressed the opinion that, if farmers would keep records such as other business concerns maintain, they would be much more efficient and profitable. Actually, because of the many differences between agricultural and non-agricultural operations, if farmers did keep such records practically all of them would be bankrupt since every farmer would need about two bookkeepers.

## Objectives of a Study of Farm Records and Accounts

The student of farm records and accounts should keep in mind several definite objectives. Because of the many different kinds of farms and farmers, he should recognize that no one system of farm accounting or no one farm record will fit the needs and

capabilities of all farmers; thus, he should be prepared to approach the problem from the point of view of logic rather than rigid accounting rules. His first objective should be to familiarize himself with the different kinds of records and accounts so thoroughly that he can plan and develop a system of farm records and accounts for each individual situation.

To plan such a system one not only must have a general background of the different kinds and methods available but also must know: (*a*) the exact sort of information the particular farmer needs in his business, (*b*) the amount of time the producer can spend to obtain the desired results, (*c*) the ability of the farmer to keep the different records, and (*d*) the capacity of the farmer to analyze and use the records after they have been assembled. A formal course of study should give the student the necessary background to evaluate the kind of records needed for any individual situation.

The second major objective should be to learn the mechanical operations needed to keep each of the different types of records. In contrast to commercial bookkeeping, no two farm records follow the same general accounting rules. There are certain basic principles underlying all farm accounting, but the application of these principles varies with the kind of record kept and the ability of the individual who is to record the data from day to day to use the assembled information.

Third, the student should learn to analyze the different records and accounts and become qualified in determining the best use for these records and what recommendations or actions are to be made on the basis of the facts obtained. Simply recording facts from day to day is not enough; one must learn to apply these facts and use them in making the farm more efficient and profitable.

Finally, as the incidental by-product of the first three major objectives, the student should become familiar with the physical requirements of the farm enterprises common to his region, such as feed requirements for various livestock, production rates, crop yields, seeding rates, and unit costs, to assist him in learning more of the business end of farming.

A farm record is not an end in itself but is just another valuable tool for attempting to make the farm more successful. Like any

other tool, the success of the record is dependent directly on the use made of it after it is obtained. Any farm record should be complete enough so that it will help to improve farming efficiency, but it should also be simple enough so that the farmer himself can keep it from day to day, analyze it at the end of the year, understand the results, and apply them in the operation of his business. Many farmers become disappointed with farm records because they start off with a tool or kind of record which is too complicated for them to keep, analyze, and use. In initiating any farmer to a system of farm accounts, it is preferable to make the system too simple and too brief rather than too complicated or excessively time-consuming.

## EXERCISE 1

1. Discuss briefly the purpose of farm records and accounts.
2. List the important ways in which farmers can use facts obtained from farm records and accounts in improving the efficiency and profitableness of the farm business.
3. What are the limitations in the use of information obtained from farm accounts?
4. Explain the major reasons why farm accounting differs from business accounting.
5. What are the major objectives of a study of farm records and accounts?
6. List the special facts needed in order to plan a system of farm records and accounts for an individual farm.
7. Discuss the major factors to be considered in suggesting a system of farm records and accounts to an individual farmer.
8. Write a brief one-paragraph description of a farm business with which you are familiar, listing the size of the business, the major and minor enterprises, and a general description of the kind of farming. From this description, list the more important separate accounts which would be needed in order to have a fairly complete record of the operations of this business. Repeat the same process for a local retail store. Which of the two has the more complicated and difficult accounting problem, and why?

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## CHAPTER 2

# Terms Used in Farm Accounting

Beginning the study of a new subject resembles visiting a foreign country without understanding its language. In a foreign country, as well as in the study of farm records and accounts, the first task is to learn the language. The problem of becoming adjusted to the language of a new region or subject to be studied is not quite so apparent in the study of farm records and accounts as that of understanding the Spanish used in many South American countries, because many of the terms used in farm accounting sound very similar to terms that we have heard and used many times whereas the terms of a new language are completely unknown. Because of the exact nature of all accounting work, each term must have a narrow, specific meaning although the same term used in a broader sense may mean something greatly different. Unless a sound foundation in the meaning of the terms is established, one is quite likely to discuss for a long time some farm accounting problem only to find that the person with whom he is conversing has a different interpretation of the words he thought to be commonly understood. The word "homely" is a compliment when used in England to describe the desirable, homelike qualities of a lady. In the United States, the same word implies unattractiveness rather than desirableness.

In a similar manner, the farm accounting language is likely to be deceiving because it may be interpreted differently in another part of the country. A national committee on farm management terminology which made a study of commonly used terms found that "farm expenses" had seventeen different meanings in the United States. There are certain justifications for the interpretation of each, but so many varied applications of the same term are unfortunate because, although all interpreta-

tions may be correct, the variation may result in great misunderstanding.

The definitions presented in this book are those which are used most commonly and which, in the opinion of the author, are most desirable. Each is subject to question, however; and it is important that an agreement be reached on a definition of each term in order to eliminate misunderstandings.

## Terms Relating to Statements of Financial Condition

1. *Farm Inventory.* A farm inventory is a list of all that a farmer owns and all that he owes, established at a specific given time, showing the value of each item; it is the farmer's balance sheet. This term is one example of the way in which the commonly accepted farm accounting terms differ from the usual terms applied in commercial and business accounting. In business accounting, an inventory is simply a list of the physical stock and materials on hand with the value for each item, but it does not include the invisible items of value or the debts of the business. The correct business accounting term which is directly comparable to the farm inventory is the "balance sheet."

2. *Assets.* Assets, or resources, include all items of property having a money value which are in the legal possession of a person or firm, including all claims against the property of others. The usual assets of a farmer include the farm land, buildings, equipment and machinery, livestock, accounts and notes receivable, cash on hand, and other personal belongings. The assets of a farm as a unit include all of the above items necessary to the usual operation of the farm business but do not include cash on hand in excess of that needed to conduct the ordinary operations of the farm business until cash income is received, nor do the assets cover other non-farm resources such as outside investments or personal property. Accounts receivable, if the income is due from farm sources and is part of the usual farm business operation, should be included in farm assets; if the accounts or notes receivable are from non-farm sources, they should not be listed as part of the farm resources.

In the preparation of a statement of the resources of the farmer as an individual, to determine his individual net worth,

all his resources, both farm and non-farm items, should be included. In the preparation of a statement of the resources of the farm as a unit, for use in analysis purposes, only the items actually needed and used in the ordinary operations of the farm business should be included.

3. *Current and Fixed Assets.* For purposes of analysis, total assets usually are divided into current and fixed assets. Current assets are those resources which, in the ordinary operation of the business, will be used in the business or converted into cash within a relatively short period of time, usually one year. Fixed assets include those resources which in the ordinary operation of the business will not be used up or converted into cash within a short period of time such as one year. Current assets on most farms include cash on hand, short-time accounts and notes receivable, growing crops, feeds and supplies in storage, and livestock to be sold or consumed within one year. Fixed assets include land, buildings, permanent equipment and machinery, and livestock which is to be maintained on the farm for more than one year. For some purposes of analysis, total resources are divided into current, working, and fixed assets. The working assets group is the one which is intermediate in character and has more stability than cash and accounts receivable but less permanence than land and buildings.

4. *Real Estate and Personal Property.* For purposes of taxation, the preparation of credit statements, and similar items, total assets or resources occasionally are divided into real estate and personal property. Items of value included in real estate are land, buildings, and all things that are a part of or attached to land or buildings and hence are not readily movable. Items of personal property include equipment, machinery, livestock, feeds and supplies, crops in storage, accounts and notes receivable, and all other items of value which under usual conditions are freely movable. In any division of total assets into real estate and personal property, the determining factor is whether or not the item is freely movable. Since unusual items such as fences, drains, wells, and growing crops cannot be moved, they are classified as real estate. Such things as harvested crops in storage, fence wire and posts on hand, and pumping equipment for

the well, although very similar in nature to the items mentioned above, are freely movable and are classified as personal property.

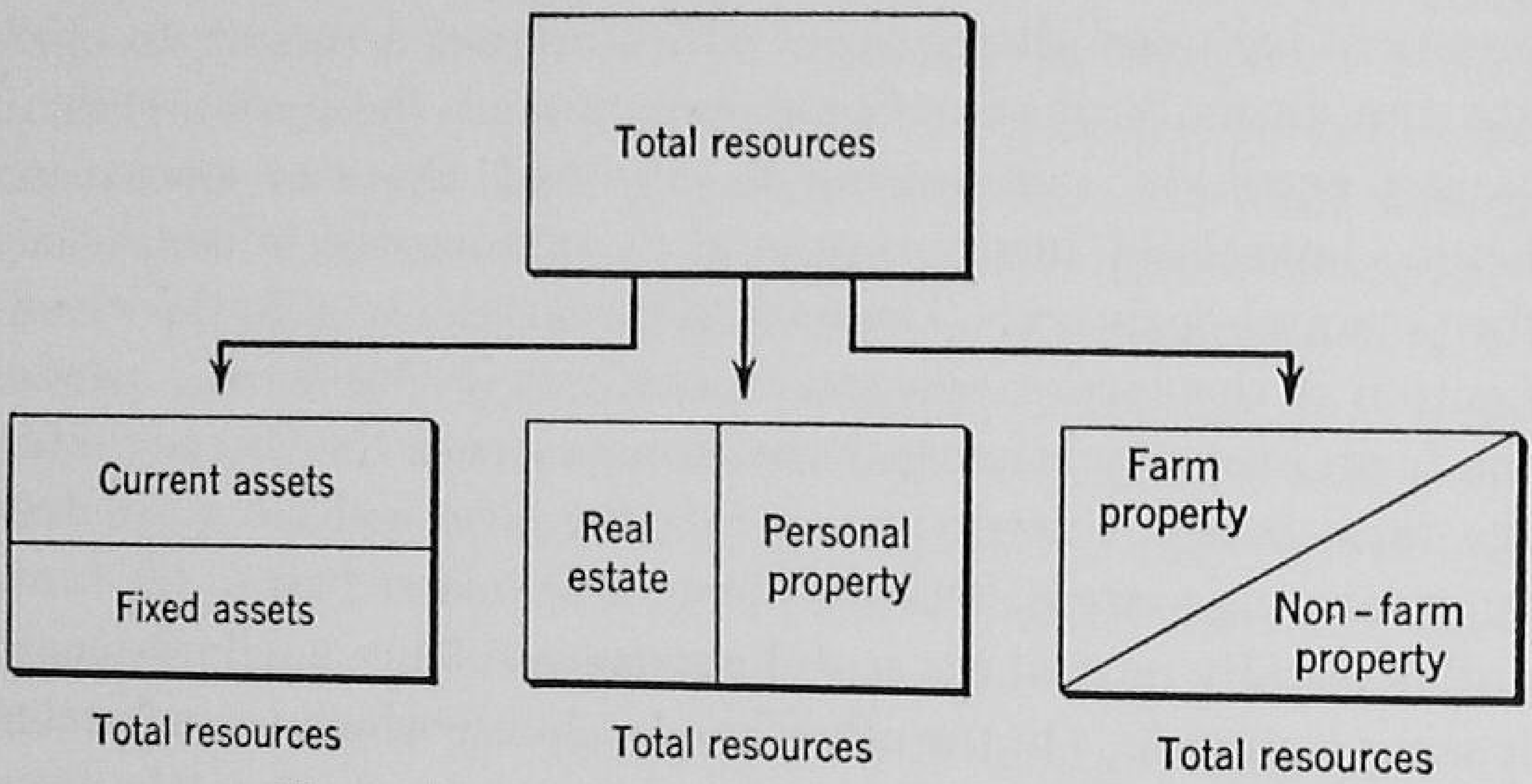
5. *Farm and Non-farm Property.* In order to study the detailed financial structure of the farm itself, total assets occasionally are separated into farm and non-farm resources. Farm property includes all items which are necessary to the farm and are a part of the usual farm business. Such resources are land, all buildings, machinery and equipment for farm use, livestock, feeds and supplies, seed, and other farm resources. Non-farm property includes all resources which are not necessary to operate the farm business. Some examples of these are: cash in saving accounts, investments in city real estate or stocks and bonds, household furnishings, and the automobile if used solely for personal purposes. The most controversial item in this classification is the farm residence. Usually it is considered a part of the farm property because, in most instances in the United States, the farm house is needed to operate the farm under our isolated-type farming system, is always bought or sold as part of the farm, and is usually part of the rental agreement of any landlord-tenant leasing contract. On the other hand, a house which is not located on or near the actual farm land and is not necessary to the farm business is definitely not part of the farm capital. Also, the dividing line whereby the house in any case is considered farm property, while household furnishings are considered non-farm property, is a delicate one; one might argue justifiably that both are necessary in order to live on and operate the farm. In the majority of cases, however, farm accountants and analysts have included the house but excluded the furnishings as farm capital. Other difficult items to classify include resources which are used partly for the operation of the farm and partly for personal purposes. The most common item of this type is the farm automobile. This problem is solved by including a part of the value of such items in farm property according to the proportion of its total use for productive farm purposes, the remaining part of the total value being established as non-farm property.

In the division of total assets into current or fixed assets, real estate or personal property, or farm and non-farm capital, it should be kept in mind that there are three different ways of

breaking down total resources and that ordinarily only one way is attempted at a time, since any subdivisions are difficult because the definitions conflict. This principle is illustrated as follows:

The only variation from this general principle is the occasional analysis of farm capital by dividing it into current and fixed items.

6. *Liabilities.* Liabilities include all legal claims by others to property or income of an individual or firm. More briefly, lia-




**Three ways of classifying total resources.**

bilities are the bills or itemized lists of the different individuals or firms to whom the farmer owes money. The usual liabilities of a farmer include his feed, seed, and grocery bills, the machinery and equipment accounts which are unpaid, amounts due on outstanding notes signed when borrowing money to finance crop planting and harvesting, the purchase of livestock, and the like, and the interest and principal due but unpaid on the usual farm mortgage.

In the preparation of a statement of the liabilities of the farmer as an individual, all the liabilities including the debts incurred to operate the farm business and any personal bills should be a part of the summary. In the preparation, for analysis purposes, of a statement of the liabilities of the farm as a unit, only the liabilities incurred in the operation of the farm as a business should be included. Thus, in a summary of the individual liabilities of a farmer, both the farm mortgage and the bill owed for the radio purchased on credit should be included; for a similar

summary of the liabilities of the farm as a business unit, the personal debts should not be a part of the statement.

7. *Current and Fixed Liabilities.* For purposes of analysis, total liabilities usually are divided into current and fixed liabilities. Current liabilities are those debts which in the ordinary operation of the business are due and will have to be paid within a short period of time, usually one year. Fixed liabilities include those debts which in the ordinary operation of the business will not come due or will not have to be paid within one year. Current liabilities on most farms include merchant bills and accounts and short-time notes used to finance growing crops or livestock feeding operations. Fixed liabilities include long-time notes used to finance the purchase of machinery or breeding livestock and the farm mortgage. The important factor determining the classification of liabilities is the time of repayment. For items such as notes or mortgages on which a certain amount is due each year, the amount due for the current year should be listed as current and the remainder as fixed.

8. *Net Worth.* The net worth of an individual's business is the amount it is actually worth after subtracting the total debts from the total resources; it is the difference between the total assets and the total liabilities. The net worth of a farmer indicates the amount he owns of the entire business. For an incorporated business, the net worth is indicated by the total value of the capital stock issued plus the total undivided surplus.

9. *Equity.* Equity is an accounting term used to designate ownership. The stockholder's equity in an incorporated business is indicated by the total value of the capital stock plus the undivided surplus. The farmer's equity in his business is indicated by his net worth.

The word "asset" is an accounting term used to describe any item of property which has a money value. The term "equity" is used to describe ownership of the assets. Since assets describe the property and equities indicate the ownership of the property, then the total equities of a business never can be more or less than the exact amount of the total assets. Thus, the mysterious accounting rule wherely total assets always must balance with total equities is explained easily.

## Terms Relating to Results of Operating the Farm Business

1. *Journal.* A journal record is a list of all financial transactions listed in the exact order in which they occur. It is a chronological record of the farm business.

2. *Ledger.* A ledger book is a record of secondary entry prepared from the original journal records in which the chronological journal information is organized, classified, and summarized. Because of the fact that in keeping both a journal and a ledger book each transaction must be recorded first chronologically and later re-entered in a classified form, most farmers do not keep both journal and ledger records. They simply record their original entry and their final entry at the same time in the final classified form as a type of ledger account. This can be done on most farms but would be impracticable for large business operations because the number of entries per day on a farm are relatively few in comparison to the usual business transactions in one day. The journal records the expenses and receipts as they occur; the ledger serves to group the expenses as to feed costs, labor costs, equipment expense, etc., and the receipts as to corn, potatoes, dairy cattle, or poultry. Thus, the journal can be eliminated if each item of expense and receipt is listed in the proper classified account at the time it is recorded.

3. *Debit.* A debit is a charge to a person or to an account. In the usual ledger account, in which all inputs are listed on the left side of the page and all withdrawals on the right side, a debit is an entry on the left side of the ledger account.

4. *Credit.* A credit is a receipt or credit to a person or to an account. In the usual ledger account, it is an entry on the right side of the page to indicate income received, such as the sale of crops or credit for home use.

5. *Account.* An account is a systematic arrangement of financial information regarding any phase of a business, the purpose of which is to show the relation of debits (inputs or charges) to credits (outputs or income). An account may be a very specialized record of one small part of the entire farm business, such as a record of the costs and returns from the poultry enterprise, or

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it may be a more generalized record, listing the receipts and expenses of the entire farm business.

6. *Depreciation.* Depreciation refers to the loss or decline in value which occurs in time with items of property such as buildings, machinery and equipment, breeding livestock, fences, and supplies. For any item or group of items, depreciation is computed by determining the total of the beginning inventory value plus all purchases and improvements of the item during the year and subtracting from this sum the total of the ending inventory value plus all sales during the year. If the second sum is larger than the first, there has been "appreciation." The beginning inventory plus purchases and improvements represents the total inputs or debits for the item or group of items, whereas the ending inventory plus sales during the year indicates the total income or credits; thus, the difference is the net gain or loss. Accurate depreciation computations depend, to a large extent, on the establishment of reliable inventory values at the beginning and the ending of the year. In placing inventory values, reasonable allowance should be made for wear and tear, obsolescence, and changes in market value.

A measure of net depreciation, the "decrease in farm capital," is computed by comparing the total value of the farm assets subject to depreciation at the beginning of the year with the inventory value of these same items at the ending of the year, with proper adjustments for purchases or sales of these items during the year. This determination usually includes the farm buildings (but not the farm residence, since it is considered non-farm property), machinery and equipment, breeding livestock and workstock, feeds and supplies, and fences, wells, and drains. It does not include changes in cash, in accounts receivable, or in accounts payable.

7. *Farm Receipts.* Farm receipts include the total income received or earned from all farm sources during a given period of time. Ordinary farm receipts are: cash received or due from the sale of crops, livestock, or livestock products; cash or credit sales of equipment and supplies; income from miscellaneous farm sources such as government payments, rent received, team or machine work off the farm and other custom work, and any increase in the total farm capital which occurred during the year.

To measure the results of operations for any one year, the non-cash item "increase in farm capital" is included as one of the important income items in order to adjust for expenses which may have occurred in the building up of a livestock herd or the addition of a new barn which may not have been offset by current sales.

The increase in capital is computed in the same manner as the decrease in capital is determined. Thus in any individual case there cannot be both a net increase and a net decrease in farm capital for the same year; on any farm, during any year, the farm capital will decrease during the year, or increase, or remain the same.

8. *Farm Expenses.* Farm expenses include all the ordinary costs of operating the farm business with the exception of interest paid and the value of the operator's time. The most common farm expenses are: costs for labor, feed, seed, fertilizer, taxes, and similar ordinary cash expenses; value of all unpaid farm labor used, charged at the rate paid to hired labor at local rates; any net decrease in the value of the total farm capital from the beginning to the ending of the year; indirect farm expenses such as the pro rata share of the automobile costs and electrical and telephone bills; and costs for all repairs, improvements, and additions made on the farm during the year.

Interest paid is a legitimate farm expense, but it is omitted in the computation of farm expenses for most purposes because, if it were included, it would be impossible to compare expenses from farm to farm; some farms may operate entirely on borrowed money but others use all their own capital, and the variation in interest charges will overshadow more significant differences. Where the records are sufficiently detailed, it is desirable to separate interest costs into two groups for purposes of analysis: (*a*) long-time interest paid on obligations entering into average farm capital on which interest on investment is usually calculated, and (*b*) short-term interest paid on loans made and discharged during the year. The short-term interest costs are frequently included as farm expenses. The value of the farmer's own time is not included as an expense because, for most farm accounting computations, the establishment of the farm expenses is an inter-

mediate step in the determination of a final figure summarizing the exact amount the farmer made for his own work on the farm.

The estimated value of all unpaid labor other than that of the operator is included as a farm expense in order to make costs comparable from farm to farm. Otherwise, a farmer with five growing sons might show total farm expenses much lower than a neighboring grower who had exactly the same size and kind of farm and volume of business but who had no sons and hired all his labor. Actually, the producer with the five sons who assisted with the farm work probably would have less cash on hand at the end of the year although he did not have a large direct cash labor bill. To measure the results of total farm operations for any one year, the non-cash expense item "decrease in farm capital" is included as one of the cost items in order to adjust for any unusual income which might have occurred during the year in the selling out of a livestock herd or part of the farm land not offset by current charges.

## *Measures of Returns in Farming*

Farming is a very complicated business in which the usual operator of even a very small unit acts as investor, manager, and laborer. Under such circumstances, statistical measures to determine the financial success or failure of a farm business are difficult to ascertain. In general, to be considered a financial success a farm business must meet the following requirements: (*a*) It must pay all farm expenses incurred; sufficient cash income must be received to pay all costs of operation. (*b*) It must pay the prevailing interest rate on the capital invested, including the operator's capital as well as any borrowed funds. This is necessary as the funds invested in some other manner would very likely return the prevailing interest rate. Also, most farms are financed by mortgages and short-time notes on which interest must be paid out of the farm income after the farm expenses have been deducted. (*c*) It must pay fair wages to the farmer. Since the farmer, as a laborer, could obtain wages in other occupations, the farm must return to him equivalent wages in either cash or non-cash values. The actual amount will vary, depending on the

training, experience, and ability of the individual. (*d*) It must leave the farm as productive at the close of the year as it was at the opening of the year's operation.

Because the ordinary farm business is in reality very complicated, including a varying combination of labor, capital, and management, no one measure of return is best for all purposes, all individuals, or all systems of farming. The most important measures of farm returns and their adaptations are as follows:

1. *Farm Income.* Farm income is computed by subtracting the total farm expenses from the total farm receipts. It represents the pay which a farmer receives for his labor and management and the use of the total capital invested in the farm business, in addition to the use of a house and all farm products consumed, after paying all business expenses. Since it measures the combined return to the farmer for his capital, labor, and management, it is of little value as a final measure of farm earnings but is very useful as an intermediate step in the computation of other, more important measures of farm return.

2. *Labor Income.* Labor income is the pay which a farmer receives for his labor and management in addition to the use of a house and products furnished by the farm after paying all farm expenses and after deducting a charge for the use of capital invested. It is the income to the operator for his labor, or farm income minus an interest charge on the average investment at the prevailing interest rate.

Labor income is computed by determining first the average capital investment of the farm. This is done by adding the total value of all farm property at the start of the year to the value at the close of the year and dividing by 2. Second, the average farm capital thus determined is multiplied by the prevailing interest rate. In recent years, this rate has been about 5 per cent. Finally, this interest charge is subtracted from the farm income to obtain the labor income.

The advantage of this measure of farm return is that it compares farmers rather than farms by eliminating the effect of large capital investments. It is comparable to the cash wage of a permanent hired man on the farm and therefore is easily understood; it considers the farmer as a laborer rather than a capitalist,

as it provides a measure of the farmer's earnings from his labor rather than items received for the use of his money.

The disadvantages of this measure are that, since the non-cash value of farm perquisites or privileges are not included in income, the labor income of a farmer cannot be compared to the salary of a city employee. Labor income does not measure the exact net gain or loss from an accounting sense and does not show the farmer's cash return for his labor. It does not indicate in all cases low or high total returns since a farmer with a low labor income may be making a comfortable living if he is comparatively free of debt, if there are many non-cash items in the list of expenses, or if he produces a large amount of products on the farm for home use.

For the United States, as a whole, labor income is the measure of farm return most commonly used by farm accounting and farm management workers. It is the best measure to use on the many fairly specialized family farms of the nation which depend on two or three farm products for most of the cash income and produce relatively small amounts of crop and livestock products for home consumption. Such conditions prevail to the greatest extent in the agricultural regions of the northeastern and north central states.

3. *Labor Earnings.* The labor earnings of a farmer include the total net returns to the operator for the year's work, including both cash and non-cash income. It is the total pay a farmer receives for his labor and management, including credit for the use of the farm house and the value of all non-cash items furnished by the farm, after paying all farm expenses and after deducting a charge for the use of capital invested in the business.

Labor earnings are computed by adding to the labor income the total value of all farm privileges furnished by the farm to the family and the rental value of the farm house. In the computation of labor earnings, the most difficult step is to establish reasonable values for the various farm perquisites. The most common procedure for this step is to price each item, such as milk, eggs, vegetables, food grains, and fruits, at the price for which the item could be sold at the farm. If such prices are not easily available, the alternative is to establish the values at the prices

used in the most common marketing place after subtracting the costs of marketing. This method serves to establish values which are relatively low in comparison with values of the same products if purchased in some city market, but it is the most realistic method since a product on the farm does not include the many marketing, processing, and servicing facilities which are included in the price of the final product if purchased at the usual retail market.

The advantage of labor earnings as a measure of farm return is that, since it is directly comparable to the cash earnings of a city wage earner, it is understood more easily than any of the other most commonly used measures; in areas of more or less self-sufficient farming, where a large part of the farm income is in the form of commodities produced on the farm for home consumption, it is the only measure that gives a true indication of the total net returns to the farmer for his labor and management.

The disadvantage of this measure of farm returns is that labor earnings often are affected more by the size of the farm family and the age of the children on the farm than by the management of the farm, since the privileges are included in the income. Because of this, it is not always an accurate measure for comparing relative efficiency from farm to farm. Also, since the estimates obtained from farmers concerning the value of farm privileges are probably the most inaccurate part of the usual farm record or farm survey, labor earnings usually cannot be considered as accurate a measure as labor income.

In the United States, labor earnings as a measure of farm earnings are better adapted to use in areas and on farms where a relatively small self-sufficient farming program is in operation. Such conditions exist in many regions of the south and to a lesser extent in other agricultural regions.

4. *Per Cent Return on Capital.* The farmer's return to capital represents the income earned on the capital investment. The per cent return on capital indicates the rate of earnings produced by the capital invested in the farm business. This measure of farm return is directly comparable to the measure of earnings most commonly used by other kinds of business operations, the per cent return on the investment.

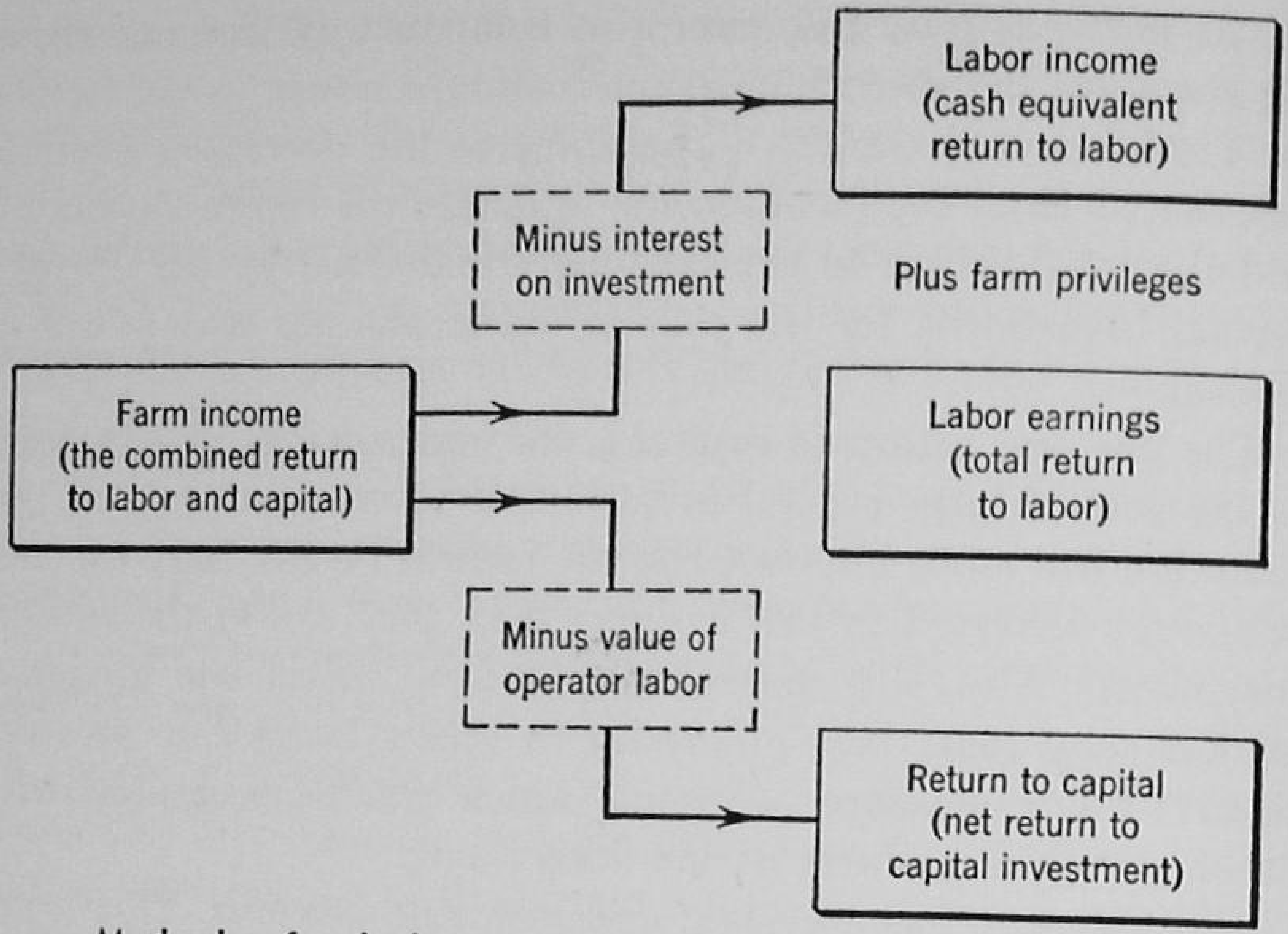
The per cent return on capital is computed by first determining the farm income, which is the combined return to the farmer for his labor and capital. The value of the operator's labor is subtracted from the farm income to obtain the return to capital, and the total return to capital finally is divided by the average capital investment for the year to obtain the per cent return to capital.

The per cent return to capital is the best measure of return for farms with a large capital investment because producers in this situation are more interested in the returns on the large amount of money invested in the business than they are in the returns for labor. Also, this measure is the most useful one for landowners who rent their properties to others because it provides them with a measure of return which can be compared with other possible methods of investing funds.

The measure has a certain disadvantage, however. The computation of return to capital involves an estimate of the value of the operator's labor which may be inaccurate since many farmers have little basis for making such an estimation. The best basis for making this estimate is to establish the value according to the amount the individual could earn if he worked throughout the year for a neighboring farmer or in a nearby business or industry. Also, many farmers have so little capital invested that the per cent return on the capital is of little value as a measure of profit.

This measure of return is adapted best to any farm on which the return to capital is more important than the return to labor because of the large size of the farm and the amount of the investment or because of the fact that only a small amount of labor is applied by the operator on the farm. Many of the large farms in the midwestern and western states have such large investments that this measure is adaptable for them. It is also of value in other regions on large farms such as the corporate operations in the northeastern and north central states and the plantation or ranch operations of the south and southwest.

Labor income, labor earnings, and return to capital, all being computed from the same base, farm income, are likely to be difficult to understand by beginning students. An illustration of the computation of each is shown in the diagram.




**Methods of calculating measures of returns in farming.**

5. *Other Measures of Farm Returns.*

(*a*) Cash available for family living. This measure includes the cash on hand at the beginning of the year plus all cash received minus cash paid out for purposes other than living expenses.

(*b*) Family net cash income. The cash receipts from all sources minus the cash expenses for operating the farm plus interest paid on farm indebtedness.

(*c*) Family labor earnings. Labor earnings plus the value of unpaid family labor.

(*d*) Labor returns per man. Comparable to labor income but is the average for all workers on the farm.

(*e*) Labor earnings per man. Comparable to labor earnings but is the average for all workers on the farm.

(*f*) Net returns per acre. Returns above all costs except land computed on a per acre basis.

(*g*) Net gain. Net return above all costs including operator's labor and interest charges.

(*h*) Return per hour of labor. Return received per hour of labor worked on an enterprise, computed by dividing the hours

of labor worked on the enterprise into the total returns above all costs except labor.

## EXERCISE 2

1. Explain briefly why one must understand the terms used in farm accounting.
2. Demonstrate the three different ways of dividing the total resources of a farmer.
3. Discuss the reasons why total equities must always balance with total assets.
4. What are the differences between a journal and a ledger account?
5. How would you compute the annual depreciation on a farm tractor?
6. What general groups of items are included in farm expenses?
7. What requirements must be fulfilled if a farm is to be considered a financial success?
8. List the advantages and disadvantages of labor income and labor earnings as measures of farm profits.
9. Under what circumstances would you recommend the use of labor income, labor earnings, and per cent return on capital as the best measure of farm profit?
10. From the summarized record of Farm 1, compute the following accounting terms or measures:

A. Terms relating to statements of financial condition:

(1) Investment in real estate.
(2) Current assets.
(3) Fixed assets.
(4) Total assets.
(5) Total equities.
(6) Operator's equity.
(7) Net worth.
(8) Personal property.
(9) Current liabilities.
(10) Fixed liabilities.
(11) Total liabilities.
(12) Farm capital.

B. Terms relating to results of operation:

(1) Average farm capital.
(2) Net gain or loss.
(3) Livestock depreciation or appreciation.
(4) Equipment depreciation or appreciation.
(5) Increase or decrease in total farm capital.
(6) Farm receipts.
(7) Farm expenses.
(8) Farm income.
(9) Interest on average investment (at 5%).
(10) Labor income.
(11) Labor earnings.
(12) Per cent return on capital.

## SUMMARIZED RECORD OF FARM 1

| | Beginning of Year | Ending of Year |
|---|---|---|
| A. Farm inventory | | |
| Resources: | | |
| Operator's house | $ 1,637 | $ 1,500 |
| Tenant houses | 4,073 | 3,900 |
| Barns | 2,222 | 2,000 |
| Other buildings | 1,444 | 1,300 |
| Fences | 384 | 400 |
| Land—2,307 acres | 27,684 | 27,684 |
| Livestock | 6,057 | 6,638 |
| Power machinery | 325 | 1,006 |
| Other machinery and equipment | 1,941 | 1,813 |
| Seeds, feeds, etc. | 1,790 | 1,825 |
| Cash on hand | 500 | 1,000 |
| Accounts receivable | 250 | 150 |
| Household goods | 800 | 800 |
| Value of fall plowing and winter oats | 500 | 300 |
| Stock in U. S. Steel | 500 | 500 |
| Debts: | | |
| Accounts payable | $ 150 | $ 250 |
| Notes—30 days | 200 | — |
| Mortgage | 1,600 | 1,200 |

| | |
|---|---|
| B. Money received during the year | |
| Crops | $10,910 |
| Livestock products | 594 |
| Livestock sold | 1,250 |
| Soil conservation payments | 2,300 |
| Land rent | 283 |
| Lumber sold | 800 |
| From accounts receivable | 100 |
| Dividends from U. S. Steel stock | 25 |
| Borrowed from bank | 100 |
| Inherited from brother | 200 |
| C. Money paid out during the year | |
| Hired labor | $5,019 |
| Repairs to machinery | 419 |
| Repairs to buildings | 290 |
| Repairs to fences | 60 |
| Feed | 1,007 |
| Fertilizer | 1,041 |
| Cotton ginning | 722 |
| Power equipment expense | 279 |
| Taxes | 350 |

| | |
|---|---|
| Seeds and plants | 716 |
| Miscellaneous farm expenses | 919 |
| Note paid off | 200 |
| Paid on mortgage | 400 |
| Living expenses | 800 |
| College fees for son | 420 |
| Livestock purchased | 210 |
| Machinery purchased | 73 |
| Power equipment purchased | 850 |
| Interest on mortgage | 85 |
| Interest on note | 3 |

D. Miscellaneous

| | |
|---|---|
| Value of operator's time (in addition to privileges) | $1,500 |
| Value of farm privileges | 806 |
| Unpaid family labor | 900 |

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CHAPTER 3

# Kinds of Farm Records and Accounts

Regarding records and accounts for the farm business the most common misunderstanding among farmers is that there is only one kind which can be kept and only one way in which it can be handled—the usual double-entry bookkeeping system used by most business houses in the locality. As long as farmers and farm accountants continue on the principle that agricultural accounting methods must be simply the adaptation of general business accounting principles, including the double-entry system, to agricultural operations, there are likely to be numerous failures in attempts to collect useful farm records. Agricultural operations are so different from most other business activities that a mere adaptation of another system with a few changes in nomenclature will not suffice; a system or series of systems must be developed to fit the needs of different farming activities and kinds of farming rather than to try to adapt agriculture to some other form of business.

There are available and in use, in one form or another, many different kinds of farm records and accounts, each of which is organized for a definite purpose and provides a useful service. The objective of the student of farm accounting should be to develop a knowledge of each and every different kind of record which has promise of being of value under certain agricultural situations, to learn how to keep and use these records, and to become familiar enough with the different records and systems to be able to determine which is best and how it can be used under any situation in agriculture where an assembly of facts may be required.

Farm records and accounts may be organized into six different groups of basic financial records: (*a*) statements of financial con-

dition, (*b*) results of operating the complete farm business over a period of time, (*c*) results of operating a particular part of the farm business over a period of time, (*d*) combination of the statement of financial condition with the results of operating the complete farm business for a given period, (*e*) combination of detailed statement of financial condition with the results of operating each particular part of the farm business for a given period, and (*f*) supplementary or facilitating records for special uses.

## *Statements of Financial Condition*

A statement of financial condition is a summary of the financial status of a business at a definite given time, including the resources of the business, the debts owed by the business, and the net worth of the operator or owners in the business. An example of a financial statement is presented on page 39. Such a statement is always prepared at some specific, definite date and can be compared to a photograph of an object which shows all its features but does not show why they appear as they are or how they have changed.

Many different sorts of statements of financial conditions are used by farmers. The most common ones include a count of the cash on hand, the bank statement, a summary of the debts owed, a summary of the accounts receivable, an estimate of the value of livestock and supplies on hand, the value of the farm including the land and buildings, and an estimate of the amount of credit an individual can obtain. Each of these items represents a statement of financial condition, each is useful under some conditions, but each is an incomplete or partial statement only.

The farm inventory, summarizing all these and other factors involved in a complete picture of the farm business at a particular time, gives the most complete statement of financial condition for the farmer. A complete farm inventory is usually necessary before any other kinds of records or accounts can be kept and analyzed; it should be considered the first and most important record to be assembled and used by all farmers. A complete farm inventory can be considered the equivalent of the businessman's "balance sheet."

Statements summarizing the financial standing of a business or farm should be clearly distinguished from similar statements presenting the financial standing of an individual. The "farm inventory," for instance, should present a complete picture of the farm business, but if it is to be used for analysis purposes to improve the farm business it should not include personal or non-farm items such as the value of the household furnishings, non-farm real estate, or other non-farm investments. The "farmer's inventory," however, which is the summary of the resources and debts of the farmer as an individual and is used mostly as a credit statement, should include both farm and non-farm assets and liabilities, since total resources and total debts are the important analysis factors in this case.

## *Results of Operating the Complete Farm Business over a Period of Time*

The second important group of farm financial records includes those that measure the results of operating the complete farm business over a period of time, usually one year. They are designed to provide a simple summary of costs and returns, or inputs and outputs, for the entire farm business without attempting to provide detailed facts concerning the results of operating the many different parts of the usual agricultural enterprises on a farm. Such records might be compared to a general moving picture of a mountainside, a picture which shows the large changes that take place from time to time but which is not focused close enough to show the detailed alterations that occur.

The most common record of this sort is the weekly or monthly comparison of the change in the amount of cash on hand or in the bank. Such a record, however, is an incomplete summary of results of operation for the period. Usually, the more complete records of this kind used by farmers include the different types of cash accounts that provide records of cash income and cash expenses; classified cash accounts, which provide for some breakdown of expenses and receipts into different standardized groups; accrual accounts, which provide measures of changes in business activities for a given time, regardless of whether the transactions listed are cash or credit; and the various kinds of simple farm

record books, which ordinarily are modifications of cash or classified cash accounts Some kind of account to measure the results of operating the complete farm business each year should be kept by most farmers. Such records are relatively simple to keep and are second only to the farm inventory in the amount of useful information furnished in comparison to the time and effort needed to keep them.

### *Results of Operating a Part of the Farm Business over a Period of Time*

The third group of financial records of value to farmers includes those records that are designed to provide the producer with detailed information relative to the operation of some specific enterprise or activity on the farm over a period of time. The most common records of this kind include the single enterprise records of various sorts, such as the poultry record, the corn crop record, and the dairy herd record. These records include the collection of detailed information on the expenses and receipts for a particular farm enterprise or special unit of the farm business.

Single enterprise records supply much valuable information to farmers, and especially to those producers who have one major farm enterprise from which most of the farm income is obtained. Such records, however, are difficult to keep accurately because of the necessity of making certain estimates and allocations. They should be approached with caution and not attempted without proper guidance and assistance. For the beginner, the first records to be assembled should be the inventory, along with a simple cash account. After these are mastered, if additional information is desired on some special farm enterprise, the enterprise account should be added to the farm accounting program.

### *Combined Statement of Financial Condition and Results of Operating the Complete Farm Business*

A system of farm records, including a detailed farm inventory condition at the beginning of the year, a summary of the operating results of the complete farm business during the year, and a

financial statement at the end of the year can be compared to a photograph or still picture of a given object at the beginning of a given period, a complete moving picture of all major changes during the period, and a final still picture of the status of the object at the ending of the period. Such a system of farm records will show the producer just how he stood at the start of the season, what happened to him during the crop year, and his position at the end of the season.

Many kinds of record forms that include a farm inventory at the beginning of the year, a cash or classified cash account for recording the expenses and receipts for the year, and a farm inventory at the end of the year are available to farmers in the United States. Most of the land-grant colleges of the different states publish such books, which are available to residents at a very small charge or in many cases are free upon request. Certain national farm equipment companies and feed distributors also publish farm record books including provision for inventories plus a cash account for the year. None of these record books will fit exactly the needs of any individual farmer, but any of them will furnish a very valuable guide for establishing the kind of combined inventory and cash account record that is needed on a particular farm.

This system of farm records will not furnish the detailed information about the farm business that would be supplied by a complete double-entry bookkeeping system. However, because of the relative simplicity of the system plus the fairly complete picture obtained of the farm business as a whole, it is the kind of farm record system which is adapted best to the majority of farmers throughout the country. More complex systems are too difficult for most farmers to keep, analyze, and use, and less complete systems will not supply the farmer with all the essential information he needs to do an efficient job of operating and managing his farm business.

## Combined Statement of Financial Condition and Results of Operating Each Part of the Farm Business

A system of farm records, including a detailed farm inventory at the beginning of the year, records of operation during the

year with separate ledger accounts for each and every part of the farm business, a detailed farm inventory at the end of the year, and provisions for transfer entries in order to close out each account and transfer all differences to the final profit-and-loss account, will supply the farmer with all the information obtained by any double-entry system maintained by another type of business. Such a system is actually a modified double-entry system with the journal eliminated by making all original entries directly in the different ledger accounts.

Complete farm financial records of this sort not only will supply the producer with a general picture of his farm business but also will give him detailed information as to the profit or loss for each crop and each livestock enterprise. If the producer has the time, the bookkeeping ability to record all the dailly transactions in the proper places, and the necessary skill to summarize and analyze these records at the close of the year, such records will supply the maximum of information of value in operating his farm business. Although most farm accounting textbooks and recommendations to farmers begin with this system of records, because it is merely an adaptation of the usual double-entry bookkeeping system, such an accounting system cannot be suggested for the average farmer. Only about five out of every hundred farmers have the necessary training and ability to keep such records, and probably at least half of these lack the inclination to do so.

## Supplementary or Facilitating Records for Special Uses

Each of the five different groups or systems of farm records discussed heretofore is strictly a recording of financial transactions or dollars-and-cents pictures of the farm business. Because farming operations are mostly dependent for success or failure on such biological factors as the yield of crops, the health and development of livestock, and the amount of sunshine and rain, the ordinary farmer needs a group of supplementary or facilitating records that are not required by an ordinary business enterprise. These records include many items involving physical quantities and other non-financial matters, such as hours of labor, pounds of milk produced, amount of feed used, tons of fertilizer

applied to different fields, dates of planting and harvesting, and breeding dates. These records are a necessary supplement to any system of farm accounting in order to analyze and use the results of the accounting process.

Supplementary records, however, should not be confused with or substituted for the major financial accounts that are needed in order to plan farming programs in an intelligent manner. One of the most common of these non-financial supplementary records, for instance, is the Dairy Herd Improvement Association Record, which is used widely by dairymen as a means of securing the relative production rates and butterfat tests of each of the producing cows in the herd to enable them to cull out the poor producers, feed according to the production rate of each animal, and develop their breeding herd from the highest-producing individuals. Some of these records go further than measuring individual physical quantities by providing summaries of the total feed cost per cow and the profit above feed costs for the entire herd. Because such records do not include all financial transactions, the results occasionally may be misleading. It has frequently occurred that the indicated profit per cow was relatively large although the herd, as a whole, lost money each month during the year. This could happen because of a large number of dry cows which were not on test but which still consumed feed, because the amount of feed fed on the day the tests were made was not representative of the average amount used per day, or because weather conditions or other unusual factors caused the production rates to be higher on the day tested than the average for the month or year.

## EXERCISE 3

1. Explain why the mere adaptation of the usual commercial double-entry bookkeeping system will not fit the needs of most farmers.
2. What should be the objective of the student of farm accounting in regard to the different types of farm records?
3. List the six different groups of basic financial records.
4. Define a statement of financial condition, and explain how it is used.
5. For what purposes are records measuring results of operating the complete farm business for a period of time designed?
6. Under what situations should single enterprise accounts be included in the farm accounting records?

7. Discuss briefly the advantages of the system of farm records including a statement of financial condition at the beginning and the end of the year and a classified cash account of costs and returns during the year.
8. Describe a system of farm records equivalent to the usual double-entry system used by other types of businesses.
9. Explain the need of farmers for supplementary or facilitating non-financial records, and point out some of the limitations of such records.
10. Write a brief paragraph describing a farm and a farmer with whom you are familiar, and suggest the system or systems of farm records which should be maintained by this producer on this farm.

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# CHAPTER 4

## The Farm Inventory

The farm inventory is the cornerstone for all other farm records and is, of necessity, the first record to be considered by any farmer in planning the types of records needed in the operation of the farm business. For the time spent, the inventory is the most valuable record for use in planning and managing the farm business, even if many other, more detailed and complex records are kept. It is a record that should be assembled and used on every farm. An inventory is easy to keep, usually requires no more than a half-day's work each year, and requires no training in bookkeeping and accounting or any special mathematical skills.

The farm inventory is a list of all that the farmer owns and all that he owes, at a given time, with the values for each item. It is the complete financial statement of the farmer. The farm inventory is not the same as the merchant's inventory, as it is more detailed and more complete; it is best compared to the balance sheet of the ordinary commercial business record.

### Why Keep a Farm Inventory?

First, a complete farm inventory, taken at the beginning of each season, will show the difference between what a farmer owns and what he owes or will reveal the net worth, which is the operator's ownership in the business. The first fact any farmer or other kind of businessman needs to know is his financial status at the beginning of the year. Many farmers think they know, but most of them are surprised when they prepare a detailed financial statement such as a carefully assembled farm inventory.

Second, comparison of a farm inventory taken at the beginning of the year with another assembled at the end of it will show

just how much the farmer's financial position has changed during the year. Two inventories taken a year apart will show the actual change in net worth and will give some indication either of gain or loss during the year.

Third, a farm inventory is a necessary record in the preparation of a credit statement. All lending agencies require a financial statement or summarized farm inventory before loans can be granted. An inventory is essential if funds are to be obtained from the Federal Land Bank, Production Credit Association, the Farmers' Home Administration, the Federal Housing Authority, and from most local banks, insurance companies, or building and loan associations.

Fourth, an inventory is an essential record for the accumulation of facts for use in filing state and federal income tax returns, settling estates or rental disputes, adjusting insurance claims, and the like. In the case of fire, a summary of facilities prepared before the fire will aid greatly in obtaining more complete and rapid adjustments.

Fifth, the farm inventory serves as a valuable check on what the farmer owns and what he owes, aids in avoiding duplication, extravagance, and overinvestment in certain items, and thereby aids in putting the farm on a business basis.

Finally, the farm inventory is the basis for all other accounting work and must be kept and summarized before any other kind of record can be made useful. Many farm records are beyond the accounting capabilities or the interests of the majority of farmers; a farm inventory record is simple enough so that it can be assembled and used by any farmer who can read and write. It is of enough value probably to pay greater returns for the four or five hours of work required each year than could be obtained for any other equal period of work on the farm during the year.

## *When Should a Farm Inventory Be Taken?*

The best time to take a farm inventory on most farms is at the beginning of the calendar year, on or near January 1. Usually, at this time of the year, the crop season is finished and work for the next season has not yet begun. Also, stored crops and feed supplies on hand are ordinarily low at this time, which

makes the inventory jobs of physical measurement of these items and estimates of value relatively easy.

Actually, the time the inventory is taken is not an important factor; it can be done in any month of the year, but to be of the most value it must be taken at about the same time each year. This period should be one when most of the farm produce of the year has been sold and most of the supplies and feeds on hand are exhausted, to avoid as many price estimates as possible and to save time in taking the inventory. On most farms this situation occurs around the first of the year, but on some farms it may be in April, May, or even September. Since growing crops are difficult to inventory, because of the problem of establishing reasonable estimated yields, it is generally preferable to make the inventory after all crops have been harvested and sold.

Another important consideration is the free time available for the farmer to do the job. Although an inventory can be taken at any time of the year, it is best to take it during a period when there is little essential work to be done on the farm, so that all labor may be utilized most advantageously.

The farm inventory is taken once each year, not daily or monthly. Among other considerations in determining the time of the year should be the deadline for income tax returns. Since most farmers file their returns on a calendar year basis, in which the estimated federal tax return is due January 15 and the final return March 15, they prefer to take the inventory around January 1, so that the inventory can be used as the reliable basis for preparing detailed information for the income tax report. For most types of farming, the farmer has more time, the crop season is over and the next one not begun, feeds and supplies are low, and income tax information is needed in the winter months, usually in January.

## How to Take an Inventory

The procedure in taking a farm inventory is simple, and the materials needed very few. No complicated record books are needed; a pencil, several sheets of paper, and a little time will suffice. First, the farmer, with a critical eye, should walk over his farm and through the buildings to make a general inspection

of the land, buildings, fences, equipment, livestock, and supplies. Then he should sit down and make an itemized list of the quantities of all land, buildings, livestock, equipment, and supplies on hand, taking time to go out to the barn to measure the stored hay, corn, and feed on hand to be sure to list the correct amounts. Next, opposite each item listed he should place the approximate dollar value. After this list of visible items with values is completed, a similar list should be made of all debts owed, such as feed bills, notes due, and mortgages, and of all loans and bills which are due the farmer but which are unpaid. Finally, this information should be summarized by listing all the different

### THE FARM INVENTORY OF JOHN DOE

| Assets | Equities |
|---|---|
| Current assets: | Current liabilities: |
| Cash on hand | Feed bills |
| Cash in the bank | Other accounts |
| Accounts receivable | Note due this year |
| Feeds on hand | Payment on mortgage due this year |
| Supplies on hand | Taxes due |
| Growing crops | |
| Stored crops for sale | |
| Livestock to be sold | |
| Prepaid insurance | |
| Total current assets | Total current liabilities |
| Fixed assets: | Fixed liabilities: |
| Land | Note due next year |
| Farm home | Balance of mortgage after this year |
| Other farm buildings | |
| Fences | |
| Wells | |
| Machinery | |
| Equipment | |
| Workstock | |
| Dairy cattle | |
| Other cattle | |
| Hogs | |
| Poultry | |
| Total fixed assets | Total fixed liabilities |
| | Net worth |
| Total assets | Total equities |

resources of the farm business and all the different debts, adding up the values of each, and subtracting the total debts from the total resources to obtain the net worth or the farmer's equity in the business.

For most purposes, it is preferable to summarize the inventory like a balance sheet, which is a typical ledger account. The ordinary items included in a farmer's inventory grouped according to the types of resources are as shown in the accompanying schedule.

## *Measuring Physical Quantities*

In taking a farm inventory, one of the most difficult problems for the beginner is the actual measurement of the physical quantities of the different items of feeds, stored crops, and supplies on the farm. Such problems do not require any special mathematical skills but do require some knowledge of general weights and measures and the experience of applying these rules to actual problems of measurement on the farm.

The bushel is the most common unit of volume and is widely used by farmers as a unit of sale or measurement. A bushel contains approximately 1¼ cubic feet. Thus, to compute the number of bushels in a given space, such as a feed bin or corn crib, the first step is to determine the number of cubic feet in the area and divide by 1¼. For ease of computation, the same result can be obtained by multiplying the number of cubic feet by ⅘, or 0.8.

The bushel as a unit of measurement was developed before scales were common and accurate enough to be reliable. Under present conditions, the bushel is not a very good measure because it measures volume and not weight. Because the bushel is a unit of volume, a bushel of oats (weight, 32 pounds) will occupy just as much space as a bushel of wheat (weight, 60 pounds), and a bushel of a given commodity may weigh much more or much less than another bushel of the same commodity, depending on the quality of the item and the methods used in packing the item in the volume container. Often farmers selling potatoes, high-quality grain, and other crops by the bushel actually deliver more than a bushel (by average weight) for each unit sold and,

as a result, incur a loss in the sale. Because of the danger of inaccurate measurement, farmers should avoid as much as possible the use of bushel or other volume measurements, although sometimes they are unavoidable.

The ton (short ton or 2,000 pounds) is the common unit of measurement for bulky products. Usually hay, straw, silage, and many other farm products are measured on this basis. On the farm, however, it is often difficult to compute the weight of these products for inventory purposes. The expense of purchasing or renting adequate scales is not justifiable, but reasonably good estimates can be made by other means.

Hay may be measured on the farm in three ways: (1) According to the space occupied. In the average mow of loose but well-settled grass hay, about 500 cubic feet of space is required per ton of hay. At the tops and sides of the mow or in low mows, a larger number of cubic feet is required. At the bottom of the mow, owing to the compressed product, only about 450 cubic feet is required per ton. As a general rule, however, a computation of the cubic feet of space occupied and this total divided by 500 will result in a reasonably accurate estimate of the hay tonnage. (2) According to the weight per load times the number of loads. It is often a simple matter to drive the empty wagon to a nearby set of scales, weigh it empty, and then load it and repeat the process and compute the difference to be the average weight per load. In baled hay, the average weight per bale times the number of bales will give a satisfactory answer. (3) According to the computed yield per acre for 1 acre with an average growth times the total acreage harvested.

Straw is measured in the same way as hay, with the average requirements being about 1,200 cubic feet per ton. All measures of this sort, however, can be considered only rough estimates since the weight of such bulky products varies according to the leafiness, moisture content, degree of packing, maturity of the crop, and the type of hay or straw.

Ordinarily land is measured and valued in terms of acres. Although a farm often is purchased as a unit with one fixed value per acre, the quality and value of the land on most farms vary widely. To compute the acreage of the different types of land,

the farm must be mapped by fields or plots and the acreage computed for each plot. Land is usually measured with a tape and pins, an aerial photograph, by pacing, or by means of a plane table. For most farms, plane table mapping is probably most convenient and is fairly accurate for inventory purposes. A small flat table, a compass, a ruler, and a tape are all the equipment necessary, and the tape is not needed if accurate pacing can be done. The table is set up at any starting point or corner, oriented by the compass, the next point or corner sighted or lined up with the ruler, a line drawn from point *A* to point *B*, and this line measured and mapped in according to scale. A similar set-up and sight made from each corner will complete the map.

A summary of approximate weights and measures is presented herewith. These measures represent average conditions but can be used, with judgment, to establish the physical quantities of most farm inventory items.

## APPROXIMATE WEIGHTS AND MEASURES

$$\text{Bushel} = 32 \text{ qt.} = 2{,}150.42 \text{ cu. in.} = 1\tfrac{1}{4} \text{ cu. ft.} = \frac{\text{cu. ft.} \times 8}{10}$$

| | Pounds per Bushel | | Pounds per Bushel | | Pounds per Bushel |
|---|---|---|---|---|---|
| Alfalfa seed | 60 | Cow peas | 60 | Pumpkins | 50 |
| Apples | 48 | Grapes | 48 | Rape seed | 50 |
| Barley | 48 | Millet | 50 | Rice | 45 |
| Beans, dry | 60 | Oats | 32 | Sweet potatoes | 55 |
| Beans, snap | 24 | Onions | 56 | Soybeans | 60 |
| Beets | 56 | Orchard grass | 12 to 24 | Spinach | 18 |
| Cabbage | 50 | Peanuts | 30 | Squash | 50 |
| Carrots | 50 | Peaches | 48 | Strawberries, 24-pt. crate | 20 |
| Clover seed | 60 | Pears | 48 | Sudan grass seed | 40 |
| Corn, shelled | 56 | Peas, dried | 60 | Tomatoes | 56 |
| Corn, ear (28-lb. grain, 7-lb. cob) | 35 | Peas, green (in pod) | 30 | Turnips | 55 |
| Cucumbers | 48 | Peppers | 25 | Vetch | 60 |
| | | Potatoes | 60 | Wheat | 60 |

### Dry Measure

| Bushel | Pecks | Quarts | Pints |
|---|---|---|---|
| | | 1 | 2 |
| | 1 | 8 | 16 |
| 1 | 4 | 32 | 64 |

### Liquid Measure

| Barrels | Gallons | Quarts | Pints | Gills |
|---|---|---|---|---|
| | | | 1 | 4 |
| | | 1 | 2 | 8 |
| | 1 | 4 | 8 | 32 |
| | 31½ | 126 | — | — |

Liquid Gallon = 4 qt.
= 231 cu. in.

| | Pounds per Gallon |
|---|---|
| Water | 8.33 |
| Milk | 8.6 |
| Molasses | 11.7 |
| Honey | 12.0 |

Ton = 2,000 lb.

| | Cubic Feet per Ton |
|---|---|
| Hay | |
| Low mows or top of mow | 550 |
| Average mow of timothy | 500 |
| Bottom of mow | 450 |
| Straw | 1,200 |

### Long Measure

| Mile | Chains | Rods | Yards | Feet | Inches |
|---|---|---|---|---|---|
| | | | | 1 | 12 |
| | | | 1 | 3 | 36 |
| | | 1 | 5½ | 16½ | 198 |
| | 1 | 4 | 22 | 66 | 792 |
| 1 | 80 | 320 | 1,760 | 5,280 | 63,360 |

## APPROXIMATE WEIGHTS AND MEASURES (Continued)

### Square Measure

| Mile | Acres | Rods | Yards | Feet | Inches |
|---|---|---|---|---|---|
| | | | | 1 | 144 |
| | | | 1 | 9 | 1,296 |
| | | 1 | 30¼ | 272¼ | — |
| | 1 | 160 | 4,840 | 43,560 | — |
| 1 | 640 | 102,400 | — | — | — |

1 section of land = 640 acres
1 acre = 209 ft. × 209 ft.
Square chains divided by 10 = acres

### Dairy Products (1 qt. milk = 2.15 lb.)

| | Pounds of 3.6% Milk to Make Pound of Product |
|---|---|
| Butter | 22.8 |
| American cheese | 10.5 |
| Cream | |
| 40% heavy | 11 |
| 30% | 8 |
| 20% | 5.5 |
| Condensed milk | 2.5 |
| Ice cream | 3 |

Butter—80 to 85% b.f.
1 can of milk = 40 qt. = 86 lb.

### Poultry Products

(30 doz. eggs = 1 crate = 58 lb. gross)

| | Dressed Weight, Pounds |
|---|---|
| "Chickens" (under 1 yr.) | |
| Broiler | 1½ to 2½ |
| Fryer | 2½ to 3½ |
| Roaster | 3½ and up |

Over 1 yr.
Stag = male 1 to 2 years old
Cock = male over 2 years
Fowl = female 3 lb. and up

### Woods

1 cord = 128 cu. ft. = 8 ft. long by 4 ft. high by 4 ft. wide. Many farmers consider 1 tier of wood 4 ft. high by 8 ft. long as a cord regardless of length of the wood. These "short cords" should be converted to standard 128 cu. ft. cords in all records.

1 square (builder's) = 100 sq. ft.
Board feet = length in feet × width in feet × thickness in inches. Less than 1 in. thick is counted as 1 in.
M = 1,000 board feet.

## APPROXIMATE CAPACITIES OF CYLINDRICAL SILOS

| Depth * | Inside Diameter of Silo | | | | | | Weight per Cubic Foot † |
|---|---|---|---|---|---|---|---|
| | 10 ft. | 12 ft. | 14 ft. | 16 ft. | 18 ft. | 20 ft. | |
| Feet | | | | Tons | | | Pounds |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 | 18.7 |
| 2 | 2 | 2 | 3 | 4 | 5 | 6 | 19.6 |
| 3 | 2 | 3 | 5 | 6 | 8 | 9 | 20.6 |
| 4 | 3 | 5 | 7 | 9 | 11 | 13 | 21.2 |
| 5 | 4 | 6 | 9 | 11 | 14 | 17 | 22.1 |
| 6 | 5 | 8 | 11 | 14 | 17 | 21 | 22.9 |
| 7 | 7 | 9 | 13 | 17 | 21 | 25 | 23.8 |
| 8 | 8 | 11 | 15 | 20 | 25 | 31 | 24.5 |
| 9 | 9 | 13 | 18 | 23 | 29 | 36 | 25.3 |
| 10 | 10 | 15 | 20 | 26 | 33 | 41 | 26.1 |
| 11 | 12 | 17 | 23 | 30 | 38 | 46 | 26.8 |
| 12 | 13 | 19 | 25 | 33 | 42 | 52 | 27.6 |
| 13 | 14 | 21 | 28 | 37 | 47 | 58 | 28.3 |
| 14 | 16 | 23 | 31 | 41 | 52 | 64 | 29.1 |
| 15 | 18 | 25 | 34 | 45 | 57 | 70 | 29.8 |
| 16 | 19 | 28 | 38 | 49 | 62 | 77 | 30.5 |
| 17 | 21 | 30 | 41 | 53 | 67 | 83 | 31.2 |
| 18 | 23 | 32 | 44 | 58 | 73 | 90 | 31.9 |
| 19 | 24 | 35 | 48 | 62 | 79 | 97 | 32.6 |
| 20 | 26 | 38 | 51 | 67 | 85 | 105 | 33.3 |
| 21 | 28 | 40 | 55 | 72 | 91 | 112 | 33.9 |
| 22 | 30 | 43 | 59 | 77 | 97 | 120 | 34.6 |
| 23 | 32 | 46 | 63 | 82 | 103 | 128 | 35.3 |
| 24 | 34 | 49 | 66 | 87 | 110 | 135 | 35.9 |
| 25 | 36 | 52 | 70 | 92 | 116 | 143 | 36.5 |
| 26 | 38 | 55 | 74 | 97 | 123 | 152 | 37.2 |
| 27 | 40 | 58 | 79 | 103 | 130 | 160 | 37.8 |
| 28 | 42 | 61 | 83 | 108 | 137 | 169 | 38.4 |
| 29 | 44 | 64 | 87 | 114 | 144 | 178 | 39.0 |
| 30 | 47 | 67 | 91 | 119 | 151 | 187 | 39.6 |

* Depth of silage two days after filling.

† Average weight per cubic foot for whole depth. Useful in estimating tons in rectangular silos. Silage at the bottom of the silo will weigh more than the same volume at the top of the silo. To find amount left, determine amount put in and subtract amount used. Example: a 16-ft. cylindrical silo was filled to 26 ft. At inventory time, the 12 ft. remaining weighed 56 tons.

## Methods of Valuation for Farm Property

In a great number of cases, the values established for many items of farm property cannot be considered completely accurate no matter what method is used to obtain the final figure. Accuracy, however, is absolute in some things and relative in others. In establishing values on most types of farm property, absolute accuracy is impossible, and it is useless to try to achieve it in the farm inventory. There is no excuse, however, for careless work. To obtain relative accuracy in a farm inventory requires painstaking care to come within the limits of accuracy that are set by the tools with which one works.

Probably the final value established for a given type of farm property will be obtained differently from values for other types of resources. Also, values for the same item may vary according to the purpose for which the value estimates are to be used. The major reasons for establishing values are for accounting purposes, bases for obtaining loans, taxation purposes, the adjustment and settling of estates, and for condemnation proceedings. For the farm inventory the object is to establish all values so as to give the most accurate picture possible of the true values of each item at that particular time. The object of the farm inventory is to show the true net worth of the business and the changes in net worth from year to year. An inaccurate valuation in the inventory at either the beginning or the end of the year will distort the picture and result in misleading conclusions.

The most common methods of establishing values for farm property are as follows:

1. *Valuation at Cost.* Farm values often are placed according to the costs of the articles. For those which are utilized over a relatively short period of time and which depreciate little before being used, such as feed purchased, seed, containers, and fertilizer, valuation at cost is probably the most reasonable and the easiest method. Since the object of the inventory is to show the true picture of the resources of the business, this method is not adapted to many items on the farm If applied to any item that is used over a long period of time and purchased infrequently, such as land, or to any item that depreciates rapidly, such as the farm tractor, this method is very inaccurate.

2. *Valuation at Cost Minus Depreciation.* Value based on the cost of the article minus a fair depreciation is common. For products which are purchased for use over a long period of time and for which there is not a ready market for resale, this method is often the best one, if normal depreciation rates can be obtained. The cost minus depreciation method in establishing values for farm land and buildings, however, is occasionally very inaccurate. For example, a house is built at a cost of $8,000. After using it 10 years, the owner estimates that it will last 40 years longer, and values the house at $6,400 (80 per cent times $8,000). However, at that time, the whole farm might not sell for $6,400 if the general level of prices is as low as it was in 1932, or the house alone might bring $10,000 if 1948 conditions prevailed. The major difficulty with this method of establishing values for farm real estate is that it takes no account of changes in prices. Many insurance companies followed this plan in making loans from 1920 to 1930 and found themselves with overpriced farms in the 1930–1940 period.

3. *Valuation According to Market Price.* Probably the market or sale value is the best method of evaluating most types of farm property. A fair market value implies that there was a willing buyer and a willing seller. A well-attended farm auction is a good place to observe the current prices for farm land, farm equipment, and farm supplies. Other sources of information on market values include the daily papers, market reports, state college experiment station and extension service reports, U.S.D.A. publications, and recent selling experiences of the neighbors. If farm resources are inventoried at the market price, the price at the farm should be used rather than the price if delivered to the shipping point some distance away. To a farmer, the true market value of a product is the price minus the costs of selling the commodity.

4. *Valuation at Cost or Market Price, Whichever Is Lower.* Many business concerns inventory all their resources at cost or market price, whichever is lower at that specific time. This method of valuation is the most conservative of all approaches to inventory values but often serves to understate many values and gives a distorted picture of the true value of resources. In preparing an inventory that will be of the most value to the farmer,

there appears to be little justification for this method in establishing values for any type of farm property.

5. *Valuation Based on Capitalized Earnings.* Establishing values according to capitalized earnings is a method of computing values according to the average earnings of the farm over a period of time. If the average net earnings on a farm over a period of years are $1,000, and the earnings are capitalized at the going rate of interest, an estimate of the value of the farm can be obtained. If the going rate of interest is 2 per cent, this sum divided into the average net earnings of $1,000 will result in a capitalized value of $50,000. With an interest rate of 5 per cent, the result will be a value of $20,000. A 10 per cent interest rate will result in a value of only $10,000.

The values obtained by this method depend on the rate of interest selected and the amount of the average earnings. A low interest rate or a high income will result in relatively high values; a high interest rate or a low average income will bring about relatively low values. Because of the difficulty in obtaining reliable average earnings on farms and because of the fluctuations in interest rates from year to year, in general this method is not desirable for establishing values for farm inventory purposes. Small errors in the estimated income or the interest rate will result in large errors in the established farm value. As a result, this method is satisfactory as a check on some other established value but not as an original method to determine the absolute price.

## Values for Specific Kinds of Farm Property

1. *Real Estate.* For accounting purposes, the values for farm land and buildings should be established according to the market value of the farm. The most accurate valuation is what the farm as a unit, including all buildings and all the different kinds of land making up the farm, would sell for at that time.

Frequently, in preparing the inventory, it is desirable to break down the real estate into units having common sale values or uses. A division of the real estate into cropland, improved pasture, unimproved pasture, orchards, woods, operator's home, tenant houses, dairy barns, horse barns, storage buildings, equip-

ment sheds, and silos will help to establish more reasonable values for the different items once the total value of the farm as a unit has been determined. It is dangerous, however, to establish such piecemeal values as a basis for building up a total for the final real estate value of the farm; most values established in this fashion are in excess of what the farm as a unit will sell for at that time. Actually, attempting to value a farm unit according to the value of its component parts can be compared to attempting to divide the value of a horse into the head, feet, neck, shoulders, and body; it is good mental exercise but has little practical value.

The evaluation of an individual farm is a problem involving judgment as well as all known facts, because land appraisal is not an exact science. The final determining factor should be the amount a purchaser would be willing to pay and would be justified in paying for the farm under ordinary conditions, on the basis of average production rates and long-time normal prices for farm products. The market value of farm real estate is affected by many factors, including location, type of community, topography, elevation, soil fertility, climate, water supply, condition of all improvements, size and type of farm, mineral rights, roads, utilities, available markets, and others. All these factors must be considered in establishing the value of the farm as a unit.

For accounting purposes, it is preferable to establish an original long-time value for the farm real estate and carry it at the same value from year to year, except for the addition of improvements as they occur and depreciation of buildings, in order to eliminate the accidental effect of changing real estate values on net worth and costs and returns from year to year. A farm is ordinarily a lifetime investment, and any paper profits or losses from temporary shifts in land values should not confuse the record of that being earned or lost on the farm as an operating unit each year.

2. *Livestock.* The selling price minus the costs of marketing or the market value is generally the best method of establishing values for livestock. A visit to a local auction will give a producer a good indication of relative values for different types of livestock. For breeding stock which are not ordinarily sold or purchased at frequent intervals, the production records, age, stage of lactation, probable future usefulness, breed, and other

physical factors must be considered. The actual market price at the time of the inventory should be used, since livestock enterprises are important sources of income on most farms and the growth and development of the livestock, in terms of the dollar value at the beginning and the end of each year, is an important indication of relative changes in the efficiency of the farm business.

3. *Feed and Supplies.* Since feed and miscellaneous supplies such as fertilizer, seed, milking equipment, dusts, and sprays are usually purchased to be used in a short period of time, these items are valued best at the original cost of the article. In times of rapidly changing prices, this valuation at cost may differ slightly from the market value, but in considering the farm as an operating unit the actual value of items purchased to be used in the near future is the cost of the article.

4. *Machinery and Equipment.* Because most farm machinery and equipment is purchased to be used until worn out, market values are not readily available; the usual and probably the best method of establishing machinery and equipment values is to use the original cost minus a normal depreciation for each type of equipment. A rate of depreciation based on the number of years the equipment will be in service will result in a reasonable value for inventory purposes.

## Methods of Computing Depreciation

Depreciation represents the amount by which a farm resource decreases in value as a result of causes other than a change in general price of items. The computation of depreciation would not be necessary if all items purchased and used by farmers were completely worn out at the end of each year. Some items, however, such as buildings and equipment, are used up gradually over a long period of years, and an important part of the accounting process is to determine just how much of the original cost of such articles should be considered a cost for one specific year. Depreciation is caused by many factors, including ordinary wear and tear in use, complete exhaustion of the article, unusual damage or deterioration, obsolescence which occurs when a new ma-

chine is introduced that will do a better job, and cessation of demand for the article when changes occur to the point that there is no longer any use for the article. Any of these factors will cause a decline in value. The most common methods in computing such depreciation of farm buildings and equipment are as follows:

1. *Market Value Each Year.* Depreciation can be computed by establishing the true market value each year for farm land and buildings and subtracting the value at the end of the year from the value at the beginning of the year to determine the cost for one year's use. However, this method involves the difficulty of establishing annual values for items that are not bought and sold frequently and for items that are used and cared for on a different basis on every farm. It has some advantages in computing depreciation for livestock, although all livestock purchased for breeding or workstock purposes and not for resale are valued best on other bases because the true accounting cost of the depreciation of such stock should be based on the original cost of the item.

2. *Straight-line Depreciation.* The straight-line method of computing depreciation results in a charge of the same amount of depreciation each year on the use of a capital asset from the first year the asset is acquired until it is worn out or disposed of. It is computed by establishing the number of years the item will last before being completely worn out and then dividing the original cost of the article into equal proportionate amounts to be charged off each year until the end of the period. If a tractor, for instance, is purchased for $1,500, and the farmer estimates that it will last five years under the usual conditions on his farm, then one-fifth of the original cost, or $300, is the depreciation charge each year under the straight-line method. If the farmer estimates that, under his conditions, he will keep the tractor for five years and that at the end of that time the tractor will not be suitable for his farm but will have a sale or salvage value of $500, then the difference between the cost, $1,500, and the salvage value, $500, or $1,000, is the amount to be divided into five equal parts, or a total of $200 a year depreciation on the straight-line basis.

The straight-line method of computing depreciation is the easiest and the simplest to compute for most farmers, and it is the only method permitted in the computation of depreciation for federal income tax returns. It does have some disadvantages, however, since certain items of machinery, livestock, and equipment are not used up at the same rate each year. An automobile or a tractor ordinarily depreciates much more during its first few years than in later years.

3. *Reducing Balance Method.* Depreciation can be computed by establishing a constant percentage rate of depreciation and applying this rate each year to the remaining depreciated value of the article. This method results in higher depreciation charges during the earlier life of the article and lower charges in later years and provides an automatic salvage value at the end of the period. If 20 per cent is established as the annual depreciation rate for the tractor which cost $1,500, then the first year the depreciation would be $300. The second year, the rate would be 20 per cent of the remaining value, $1,200, or $240, and the third year, $192. Because this method provides for very high charges in the earlier years, it may be inaccurate when computing depreciation on articles that have a relatively constant use from year to year.

4. *Reducing Fraction Method.* Another method of computing depreciation to provide for higher rates in the earlier years of use and lower rates later is the reducing fraction method. By this method, a varying percentage rate is established for each year's use and applied to the purchase price. If, for instance, the tractor is estimated to depreciate 30 per cent the first year, 25 per cent the second, 20 per cent the third, 15 per cent the fourth, and 10 per cent the fifth year, the total depreciation charge would be $450 the first year and decline to only $150 the last year. This method is refined occasionally by taking the total sum of the number of years as the denominator of the fraction and, starting at the bottom end of the scale, using the reverse number as the numerator. By this process, the total of five years of use of the tractor is $1 + 2 + 3 + 4 + 5$, or 15. Thus the reducing fraction for the first year's use would be $5/15$, for the second year $4/15$, and for the last year, $1/15$.

## *Limitations of Farm Inventories*

The farm inventory record has several limitations. Since the final results are based on a series of estimates, the net worth summary cannot be interpreted with the strict accuracy of the usual balance sheet of a business in which such estimates are not made. In the farm inventory, a difference of $30 in the total value at the beginning and the end of the year for different types of livestock is just as likely to be caused by differences in value estimations as by variations in the quantity and quality of the herd from the beginning to the end of the year. Thus, an inventory of this sort must be interpreted with caution where minor variations are involved.

Although a farm inventory record will supply the farmer with more valuable information about his farm business *for the time spent,* it is still far from being a complete system of records for the farm business and will not provide a farmer with all the essential items of information for even a simple analysis of his operations. A farm inventory will show the farmer whether he is getting ahead financially by giving him a comparison of his net worth from one year to the next, but it will not tell him why or how the changes in net worth took place nor will it indicate how much profit he made from his year's farming operations. Since the usual farm inventory includes all financial transactions, a change in the net worth may have been due to any number of personal actions such as an inheritance or a personal illness. A comparison of inventories will show the farmer his financial standing but will not show him how much was withdrawn from the farm business during the year and used for personal purposes.

## EXERCISE 4

1. Define a farm inventory.
2. List six important reasons why a farmer should keep a farm inventory.
3. What factors determine the time of taking a farm inventory?
4. How should a farmer go about taking a farm inventory?
5. Explain the most common methods of establishing values for farm property.

6. Which method is best adapted for real estate, machinery, livestock, and feeds and supplies? Why?
7. Explain and give an example of each of the four most important methods of computing depreciation.
8. Discuss briefly the limitations of the farm inventory record.
9. Using the farm inventory record of Farm 2 as listed on the following pages, prepare a balance sheet according to the usual organization of assets and liabilities for the beginning and the end of the year, and compute the change in net worth.

## FARM INVENTORY OF FARM 2

| REAL ESTATE: | BEGINNING OF YEAR | ENDING OF YEAR |
|---|---|---|
| Operator's house | $4,000 | $3,920 |
| Tenant house | 2,000 | 1,960 |
| Barn 1—main barn | 2,000 | 1,960 |
| Barn 2 | 1,000 | 980 |
| Garage | 600 | 588 |
| Chicken house | 400 | 392 |
| Wells and drains | 750 | 700 |
| Blacksmith shed | 200 | 190 |

Fences—approximately 1 mile
4-strand barbed wire
1 reel wire = 80 rods
Cost per reel = $7.00
Posts—10 ft. apart—20¢ each
Labor cost = $100
Miscellaneous: staples, etc. = $20
Built 5 years: estimated will last 15 years more with repairs

| | | |
|---|---|---|
| Value of fence | ______ | ______ |
| 101.5 acres cropland @ $50.00 | ______ | ______ |
| 220.0 acres pasture @ $20.00 | ______ | ______ |
| 75.0 acres woods @ $10.00 | ______ | ______ |
| 2.5 acres farmstead @ $50.00 | ______ | ______ |
| | ______ | ______ |

| LIVESTOCK: | NUMBER | | NUMBER | |
|---|---|---|---|---|
| Horses | 4 | $ 850 | 4 | $ 780 |
| Cows | 42 | 2,100 | 39 | 1,950 |
| Heifers | 17 | 510 | 22 | 660 |
| Calves, less than 1 year | 10 | 100 | 8 | 80 |
| Chickens | 50 | 50 | 65 | 64 |
| Brood sows | 2 | 60 | 2 | 60 |
| Shoats | 6 | 120 | 3 | 60 |
| Pigs | 10 | 60 | — | — |

| Equipment: | Beginning of Year | Ending of Year |
|---|---|---|
| 10 milk cans | $ 50 | $ 50 |
| 4-unit milking machine | 800 | 700 |
| Water heater | 50 | 40 |
| Pails | 10 | 8 |
| Cream separator | 70 | Sold |
| Strainers | 2 | 2 |
| Auto—not kept for farm business | 650 | 800 |
| 1½-ton Ford truck | 900 | 800 |
| Tractor—Farmall | 1,500 | 1,350 |
| Tractor plow | 176 | 160 |
| 3 walking plows | 60 | 50 |
| 3 spike tooth harrows | 40 | 30 |
| 4-section John Deere Tractor Harrow | 50 | 40 |
| Spring tooth harrow | 10 | 10 |
| Tractor disc | 80 | 80 |
| Walking cultivators | 20 | 20 |
| John Deere mowing machine | 90 | 80 |
| Dump rake | 20 | 10 |
| Ropes and forks | 20 | 30 |
| Empire grain drill | 50 | 50 |
| Grain binder | 140 | 130 |
| Row binder | 350 | 320 |
| Ensilage cutter | 550 | 550 |
| 2 sets double harness | 40 | 40 |
| Doubletrees, neck yokes, etc. | 20 | 20 |
| 1 double-wheeled wagon | 90 | 80 |
| 1 steel-wheeled wagon | 40 | 30 |
| Wagon box | 10 | 10 |
| 2 hay frames | 30 | 30 |
| Manure spreader | 200 | 350 |
| Manure forks | 6 | 4 |
| Irrigation equipment | 150 | 200 |
| Crosscut saw | 20 | 16 |
| Bucksaw | 6 | — |
| Axes | 10 | 8 |
| Wedges | 2 | 2 |
| Carpenter tools | 30 | 30 |
| Blacksmith tools | 50 | 50 |
| Shovels and scoops | 8 | 6 |
| 75-ft. belt | 40 | 30 |
| Grindstones | 10 | 10 |
| Gas engine | 40 | 30 |
| Clipping machine | 30 | 24 |
| Hammer mill | 100 | 90 |
| Lime spreader | 20 | 20 |

## FARM INVENTORY OF FARM 2 (*Continued*)

| FEED AND SUPPLIES: | AMOUNT | BEGINNING OF YEAR | AMOUNT | ENDING OF YEAR |
|---|---|---|---|---|
| 18% dairy feed | 4,300 lb. | $ 117.18 | 1,000 lb. | $ 42.00 |
| Salt | 1,200 lb. | 6.00 | 1,500 lb. | 30.00 |
| Wheat bran | 1,000 lb. | 22.00 | 1,500 lb. | 30.00 |
| Oat straw | 5 tons | 40.00 | — | — |
| Clover hay | 10 tons | 240.00 | 7 tons | 168.00 |
| Lumber | 3,000 ft. | 138.00 | 3,000 ft. | 160.00 |
| Potatoes | 130 bu. | 195.00 | 303 bu. | 774.00 |
| Nails | 20 lb. | 1.60 | 200 lb. | 16.00 |
| Fence posts | 500 | 80.00 | 250 | 40.00 |
| Staples | 115 lb. | 11.50 | 90 lb. | 8.00 |
| Gasoline | 54 gal. | 10.52 | 155 gal. | 55.80 |
| Silage | 80 tons | 722.56 | 60 tons | 521.30 |
| Ear corn | 300 bu. | 360.00 | 1,000 bu. | 1,200.00 |
| Fertilizer | 2,000 lb. | 64.00 | 4,000 lb. | 128.00 |
| Oil | 5 gal. | 6.00 | — | — |
| Grease | 20 lb. | 8.00 | — | — |
| Shingles | 28 S.Q. | 379.24 | — | — |
| MISCELLANEOUS: | | | | |
| Fall plowing | | 193.82 | | 134.62 |
| Superphosphate on pasture | | 60.00 | | — |
| Lime applied to fields | | — | | 349.66 |
| Hay seedings | | 430.00 | | 326.00 |
| Manure | | 1,632.00 | | 1,802.00 |
| Accounts receivable | | 2,139.30 | | 683.58 |
| Cash on hand and in bank | | 707.14 | | 824.12 |
| Feed bill | | 1,050.00 | | 1,100.00 |
| Short-term notes and accounts payable | | 1,251.72 | | 661.00 |
| Mortgage | | 4,000.00 | | 3,600.00 |
| Insurance due | | 120.00 | | — |

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*CHAPTER* 5

# The Analysis of Farm Inventories

No farm record is of any value if it is not used. A farm inventory taken at the beginning of each year's operations will serve as a valuable guide in planning the farming program for the coming year and will point out the operator's net worth in the business and his change in net worth from year to year. It will indicate in detail the physical resources with which he has to farm and will serve many other valuable objectives which have been pointed out previously. It will serve these purposes, however, only if it is used intelligently. To use the inventory one must understand how to analyze and weigh the facts summarized and to judge the relative importance of these facts. Analyzing an inventory in order to use it properly does not require any special accounting training or unusual ability, but it does require the knowledge of a few simple rules involving the interpretation of financial statements and the application of everyday common sense to these rules.

In addition to a background of the basic principles of analysis, the analysis of any inventory also requires a knowledge of the physical organization, type of farming, and historical developments affecting the individual farm business being studied. The principles of analysis presented in this chapter are intended to serve as general guides and not as hard-and-fast rules, since each rule must be applied only with due consideration to the definite facts and problems involved in a specific case. Because of the importance of these other factors, a farmer or someone very closely connected with the farm business with just a little accounting training is usually better qualified to make an accurate analysis of his individual farm business than a well-trained ac-

countant with no knowledge of the special problems or individual difficulties of a given farm business.

## Facts Revealed by the Analysis

1. *Current Solvency.* One of the most important facts indicated by a summarized farm inventory is the current solvency of the farm business or the relation of current liabilities (debts that have to be paid within a short period of time) to the current assets (resources that are, or can be, converted into cash within a short period of time). A relatively high current indebtedness in comparison to the amount of money available to pay these debts is an important danger signal indicating a defect in the financial structure of the farm business which must be adjusted at once.

For its own protection the ordinary farm business should have current assets at least twice as great as the current liabilities so that these debts can be paid in time and still leave enough cash available to maintain the usual operations of the farm for the season. This general rule that the current assets should be at least twice as great as the current debts cannot be applied on every farm, since the individual plans and problems of each farmer must be considered. Under certain situations relative safety exists where the current assets are equal to the current liabilities, although in other cases current assets even twice as large as current debts are not sufficient to indicate a safe current solvency of the farm business. The percentage expression indicating the proportion current liabilities are of current assets is usually called the *current ratio*.

2. *Long-time Solvency.* The most important single indication of the relative financial safety of a farm business is the relationship of the net worth (the operator's equity in the business) to the total resources. A relatively low proportion of the business actually owned by the operator is an indication that most of the resources of the business are owned by the creditors. This is a dangerous situation for the farmer, since these creditors may or may not call for their investments at any time. Any slight decline in the price of farm real estate may destroy completely the

operator's equity in the business. A high percentage of the business actually owned by the operator is an indication of financial stability, since it indicates that the farmer can face any sudden decline in farm prices and farm real estate values and still maintain ownership of his business.

The average farmer should have a net worth of at least 50 per cent of the total resources of the farm business, and he should work toward increasing that proportion to 75 per cent or more to be protected under all prospective situations or conditions. At the end of each year's farming operations, a comparison with previous years' records of the proportion of the total capital invested in the farm business which actually belongs to the farm operator will indicate whether the producer is improving his financial situation from year to year. This percentage computation from the inventory, called the *net capital ratio* by most accountants, should be used in connection with the comparison of the actual dollar value of the net worth from year to year since it is possible that the net capital ratio could increase while the total net worth could decrease at the same time.

In considering the long-time solvency of the farm business, as well as in the use of the current solvency analysis factor, the *current ratio*, the general rule providing that the net worth of the farmer be at least 50 per cent of the total assets cannot be applied indiscriminately to all farms without due consideration to all other factors, such as the age and status of the operator, his long-time plans, and the length of time he has been farming.

3. *Proper Financing*. A comparison of the current and fixed assets with the current and fixed liabilities will point out the relative efficiency with which the different farm resources have been financed. If the farmer has incurred numerous current liabilities to finance long-time assets, as by signing short-time notes to finance breeding livestock or making a mortgage due on demand to purchase additional land or build a new barn, the financial structure is in danger because the debts will be due before the returns from the assets can be earned.

To make such an analysis, not only must the facts from the summarized inventory be available but also a complete personal knowledge of the business must be used as a guide. For this and

similar reasons, it is preferable that the farmer himself make the analysis of the inventory, since he alone has the needed information about his business and no other individual can know the situation as well as he does.

4. *Relative Credit Costs.* In preparing the inventory, the interest rate being paid for each and every liability should be listed with the debt. When this is done, an analysis of the different debts with special attention to the interest charges will indicate the relative efficiency in comparison to credit costs. In general, current liabilities have higher interest costs than fixed liabilities. A study of the equity side of the ledger may show ways in which current debts can be refinanced to reduce interest costs or changed to fixed liabilities to improve the current solvency of the business.

5. *Efficiency in Investments.* An inspection of all the assets made with a personal knowledge of the way in which these assets were obtained and the long-time plans for the use of these resources will indicate the relative need for each and also the need for shifting investments from one kind to another in the interest of increased income or improved operating efficiency. An investment in an asset which is greater than any possible use will justify is an indication of inefficiency. A low investment in an asset important to the future income of the farm is a similar indication. The annual inventory should serve to check on the amount of livestock on hand in relation to the feed resources, the size and capacity of the barn in relation to the uses for it, the supply of spray materials and fertilizer on hand in comparison to the amount needed, and many similar factors.

## How to Find the Facts

The analysis of the farm inventory is not a difficult procedure but does require a knowledge of the method in which the different items in the summarized balance sheet were obtained, an understanding of the physical character of the farm business and the reasons behind the personal financial facts indicated in the inventory, and an organized approach toward picking out the important facts revealed by the summary. In this organized approach, certain important steps will help to make a complete analysis:

1. *Inspection of the Current Assets.* The first step in making a complete analysis of the inventory should be to inspect carefully the individual items making up the current assets. This study should be based on an evaluation of the different current resources to determine whether the total current assets are high enough in relation to the normal operations of the business and the plans for the coming year to meet current obligations and expenses as they occur until other income is received, and to determine whether they are low enough so that there is no large sum invested in a non-productive resource, such as cash or accounts receivable, which might be placed in a productive investment. A large amount of cash in the checking account may be pleasing to the eye, but in the long run it may be more profitable to use the cash for other assets, such as productive livestock or feed resources, if they are below desirable levels. Also, each of the individual items composing the current assets should be checked carefully to determine whether each is actually needed to operate the business efficiently and whether each is relatively safe and easily available. The accounts receivable, in particular, should be given special attention to determine the necessity behind each account, the terms under which they are to be paid, and the relative safety of each.

2. *Inspection of Current Liabilities.* All current liabilities should be given the same careful inspection as the current assets, including an analysis to determine whether, as a group, such debts are too high in relation to the normal operations of the business and whether each of the debts is necessary; the inspection should also review the time in which each liability in this group must be paid. In addition, the interest rates or carrying charges for each of the liabilities should be checked to compare relative interest costs to determine future actions on short-time debts and the advisability of transferring one type of current liability to another, similar debt or to a long-time liability (if there is little chance of paying it in the near future) in order to improve the current solvency and reduce interest costs.

3. *Comparison of Current Assets and Current Liabilities.* The third step in the analysis should be to compare the current resources with the current debts to determine the current solvency.

For most types of farm businesses, the current assets should be at least twice as large as the current liabilities so that all current debts can be paid, if the occasion arises, with enough remaining to maintain the usual operations of the business. On some farms, however, this requirement will vary according to the individual situation and the kind of business planned for the coming year. In the absence of more specific information, however, this two-to-one rule is a good one to follow.

4. *Inspection of the Fixed Assets.* Next, the total fixed assets and the individual items making up the fixed assets should be checked to determine whether the total investment in these resources is too high or too low in relation to the normal operations of the farm business and whether each of the individual fixed assets is sufficient for its place in the farm business. Since the fixed assets make up the larger part of the total resources of the ordinary farm business, this is the point at which the producer should check carefully each item in relation to the need for it and its importance in view of his plans for the following year, the relative position of the working assets, such as livestock and equipment, in comparison with these investments in former years and the use to be made of them in the future, and the existence of any investments that are not being put to productive uses or that have promise of being used in the future. A complete farm record that is not referred to after it has been assembled is just as worthless and expensive as a piece of equipment for which there is no use on the farm. This part of the analysis of the inventory should serve to point out any such investment in useless assets or duplication of resources because of excessive amounts in relation to use.

5. *Inspection of Fixed Liabilities.* Since the fixed liabilities represent the most important debts of the usual farm business and indicate one of the large items of expense, the annual interest and principal payment, these items should be examined to see whether they could be reduced. Perhaps idle assets could be converted into cash and part of the liabilities paid. The remainder should be converted to other types of fixed liabilities if interest costs are too high or repayment provisions are less de-

sirable than some other type of long-time loans. For most farmers, a mortgage with a flexible-payment provision is much more desirable than the usual fixed amount each year.

6. *Relation of Total Assets to the Net Worth.* The final point in the analysis should be the comparison of the total assets with the operator's equity in the business, or the net worth. The net worth of the farmer in the business should be large enough in comparison to the total resources so that sudden price declines will not destroy the producer's ownership of the business. For relative safety on most farms, the net worth should be at least 50 per cent of the total assets. This rule may vary somewhat; if the operator is fairly young and general prospects are for relatively high prices and good returns for the next few years, an equity of slightly less than 50 per cent may be reasonably safe or at least worth while if the equity is being increased steadily each year. If the farmer is older or is operating in a period of declining prices, even a 50 per cent equity in his business might not be reasonably safe. In the absence of such detailed facts as these, however, this 50 per cent rule is a good one to follow in the analysis of an inventory and is the most important point to check in evaluating the financial standing of a farmer.

An example of a summarized farm inventory is presented herewith.

## STATEMENT OF FINANCIAL CONDITION, FARM 3

| Assets | | | Equities | | |
|---|---|---|---|---|---|
| Current assets: | | | Current liabilities: | | |
| Cash | $ 200.00 | | Feed bills | $ 1,000.00 | |
| Accounts receivable | 642.04 | | Note to father | 5,850.00 | |
| Feeds and supplies | 1,850.40 | | Total | | $ 6,850.00 |
| Other | 398.25 | | | | |
| Total | | $ 3,090.69 | | | |
| Fixed assets: | | | Fixed liabilities: | | |
| Livestock | $ 608.06 | | Mortgage payable (1/10 each year, 7% interest) | | $ 9,800.00 |
| Equipment | 1,747.00 | | Total liabilities | | $16,650.00 |
| Buildings | 6,410.00 | | | | |
| Land | 11,375.00 | | | | |
| Total | | $20,140.06 | Net worth | | $ 6,580.75 |
| Total assets | | $23,230.75 | Total equities | | $23,230.75 |

Even without detailed knowledge of the personal factors behind this statement of financial condition, several important facts are indicated by the summary. In the inspection of the current assets, the accounts receivable are indicated to be relatively large, and attempts should be made to collect them at once; also, the amount of feeds and supplies on hand indicates an unusually large investment in these items. The current liabilities show excessive feed bills due and indicate overinvestment in feed. The current liabilities also include a very large note that must be paid in the near future. The fact that the note is held by the father may or may not be a desirable situation. In the comparison of current assets to current liabilities, a very undesirable relationship is indicated, in which the current resources are less than one-half as great as the current debts due, whereas, as a general rule, to be on the safe side, current assets should be twice as great as current liabilities. These facts indicate the desirability of transferring some of the current liabilities to fixed liabilities in order to improve the current solvency.

An inspection of the fixed assets reveals that the investment in livestock is very low, as it is only about one-third as great as the total amount of feed and supplies on hand. Also, the investment in buildings and land is fairly large in relation to other assets, indicating underinvestment in working assets and/or overinvestment in land and buildings. A check of the fixed liabilities indicates a kind of mortgage which is not desirable because of the fixed-payment provisions and the high interest rate charges; it suggests the possibility of a refinancing operation on all the liabilities. Finally, the net worth is indicated to be less than one-third of the total assets, which points out that the long-time solvency of the business is in danger.

## EXERCISE 5

1. Explain the difference between current and long-time solvency as indicated in the analysis of a farm inventory.
2. How will a study of the asset and liability items of an inventory help to point out the need for improved financing of the farm?
3. Which types of liabilities are likely to have highest interest costs, and why?

4. How will a study of the fixed asset items help to indicate ways in which improved efficiency in investments can be obtained?
5. List and explain the six different steps in the analysis of a farm inventory.
6. Criticize each of the following four financial statements from the standpoint of each of the six different steps listed in question 5.

## STATEMENT OF FINANCIAL CONDITION, FARM 4

| Assets | | | Liabilities and Net Worth | | |
|---|---|---|---|---|---|
| Current assets: | | | Current liabilities: | | |
| Cash | $ 2,262.02 | | Accounts payable | $6,351.40 | |
| Accounts receivable | 2,034.08 | | Notes payable | 3,558.00 | |
| Feed and supplies | 1,608.52 | | Total | | $ 9,909.40 |
| Other | 163.04 | | | | |
| Total | | $ 6,067.66 | | | |
| Fixed assets: | | | Fixed liabilities: | | |
| Livestock | $11,662.00 | | Mortgage payable | | $11,200.00 |
| Machinery and equipment | 2,702.00 | | | | |
| Buildings | 13,140.00 | | | | |
| Land and improvements | 14,284.00 | | | | |
| Total | | $41,788.00 | Net worth | | $26,746.26 |
| Total assets | | $47,855.66 | Total liabilities and net worth | | $47,855.66 |

## STATEMENT OF FINANCIAL CONDITION, FARM 5

| Assets | | | Liabilities and Net Worth | | |
|---|---|---|---|---|---|
| Current assets: | | | Current liabilities: | | |
| Cash | $ 231.60 | | Interest due on notes | $ 3,575.00 | |
| Accounts receivable | 1,183.40 | | Accounts payable | 3,850.94 | |
| Feed and supplies | 2,390.76 | | Notes payable | 12,000.00 | |
| Other | 1,249.68 | | | | |
| Total | | $ 5,055.44 | Total | | $19,425.94 |
| Fixed assets: | | | Fixed liabilities: | | |
| Livestock | $ 5,772.00 | | Mortgage payable | | $13,379.00 |
| Machinery and equipment | 2,522.00 | | | | |
| Buildings | 12,454.00 | | | | |
| Land and improvements | 9,812.00 | | | | |
| Total | | $30,560.00 | Net worth | | $ 2,810.50 |
| Total assets | | $35,615.44 | Total liabilities and net worth | | $35,615.44 |

## STATEMENT OF FINANCIAL CONDITION, FARM 6

| Assets | | | Liabilities and Net Worth | | |
|---|---|---|---|---|---|
| Current assets: | | | Current liabilities: | | |
| Cash | $ 400.00 | | Note payable—father | | $13,700.00 |
| Accounts receivable | 1,284.08 | | | | |
| Feed and supplies | 3,700.80 | | | | |
| Other | 796.50 | | | | |
| Total | | $ 6,181.38 | | | |
| Fixed assets: | | | Fixed liabilities: | | |
| Livestock | $ 1,216.12 | | Mortgage payable | | $19,600.00 |
| Machinery and equipment | 3,494.00 | | | | |
| Buildings | 12,820.00 | | | | |
| Land and improvements | 22,750.00 | | | | |
| Total | | $40,280.12 | Net worth | | $13,161.50 |
| Total assets | | $46,461.50 | Total liabilities and net worth | | $46,461.50 |

## STATEMENT OF FINANCIAL CONDITION, FARM 7

| Assets | | | Liabilities and Net Worth | | |
|---|---|---|---|---|---|
| Current assets: | | | Current liabilities: | | |
| Cash | $ 290.00 | | Accounts payable | $ 686.14 | |
| Accounts receivable | 212.48 | | Notes payable | 1,535.74 | |
| Feed and supplies | 3,745.50 | | Total | | $ 2,221.88 |
| Other | 957.90 | | | | |
| Total | | $ 5,205.88 | | | |
| Miscellaneous assets: | | | | | |
| Bonds | | $ 2,000.00 | | | |
| Fixed assets: | | | | | |
| Livestock | $ 1,590.00 | | | | |
| Machinery and equipment | 3,778.00 | | | | |
| Buildings | 25,620.00 | | | | |
| Land and improvements | 31,220.00 | | | | |
| Total | | $62,208.00 | Net worth | | $67,192.00 |
| Total assets | | $69,413.88 | Total liabilities and net worth | | $69,413.88 |

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CHAPTER 6

# The Use of the Farm Inventory in Obtaining Credit

Credit is one of the essentials of modern agriculture. Very few farms are operated without the use of credit of one type or another, and credit costs make up one of the important items of farm expense. The efficiency with which a farmer obtains credit cheaply, uses it wisely, and meets his payments is an important factor in determining his financial success in the operation of the business.

The farm inventory is a valuable tool for obtaining credit cheaply and using it wisely. In order to use the inventory for this purpose, however, the farmer must have a complete understanding of the different types of credit, the relative costs and repayment provisions of each, and the best methods for employing each type in financing the farm business. The basic principle for using credit most efficiently is to resort to it only when it is truly needed and can be repaid without undue hardship. Also, it should be bought at a credit institution, where credit is sold, rather than in a sack of feed, in order to obtain it at the cheapest rate and with the most desirable repayment provisions.

## Types of Farm Credit

Farmers need credit for three major purposes: for family living expenses, for maintaining and expanding farm production, and for buying or improving the farm. In any case, the loan should be fitted to a farmer's needs. This is possible if a loan supplies the needed amount of money at the proper time, provides repayment rates according to the ability to pay, and permits

the repayments to be made by the farmer out of the receipts of the farm business when the returns come in. The guiding principle in proper farm financing is that all credit should be arranged in terms which will allow the credit to be repaid out of the receipts from the enterprise or property for which the credit is obtained. Because of the wide differences in the types of enterprises or property financed by farmers, different types of credit have been developed. In general, these can be organized into two groups—long-time and short-time credit—depending on the type of enterprise or property to be financed and the rapidity with which income is realized from these items after being financed.

1. *Long-time Credit.* Long-time credit is that type of credit used to finance the purchase or improvement of farm resources which are exhausted only after a long period of time or those which are not exhausted but yield only a relatively small amount of income each year in comparison with the cost of the resource. Farm assets of this type include land, buildings, fences, wells, extensive drainage projects, and the like. Equipment items, such as tractors, trucks, and plows, and breeding livestock are assets which yield income slowly over a period of time and are classified more properly as long-time rather than short-time assets for credit purposes. In some cases, these working assets are considered intermediate in character and are financed by so-called "intermediate" credit.

Most of the long-term credit in the United States used in financing farms is obtained from farm mortgages. A mortgage is a deed making a conditional transfer of title to property which is given as security for the payment of a debt or the carrying out of a contract. There are, however, many different types of farm mortgages, some of which are very desirable as safe, cheap sources of obtaining long-time farm credit, but others are neither safe nor cheap. In checking the terms of a mortgage to determine its desirability for a particular financing problem, many factors should be considered. The original inspection or appraisal fee is the first cost, and these charges vary widely. Other considerations should be the years or period of time for which the mortgage is to run, the interest rate charged, the type of payments required, the total sum available, and the provisions for renewing

the mortgage if necessary. In general, a desirable farm mortgage should be for a definite period of years, usually at least 15 to 30, should have provisions for flexible payments rather than a constant payment each year, should bear a relatively low interest rate, should provide funds to the extent of more than 50 per cent of the normal value of the farm, and should have provisions for renewal if all interest payments are made promptly. A mortgage due on demand or a mortgage for less than 10 years is a dangerous type of credit for financing the purchase of a farm. Also, since risks are fairly low when farm land is the security and when only part of the total value of the farm is advanced as a loan, interest rates should be low. At the present time, interest rates of more than 5 per cent on farm mortgages are excessive, and farmers having such mortgaged property should attempt to refinance it at lower rates.

Chattel mortgages, which provide as security a conditional deed to the asset financed by the mortgage, are used in financing farm equipment and livestock purchases. These mortgages provide the lender with the right to seize the mortgaged property without any further recourse to the courts if all principal and interest payments are not made according to the mortgage contract. Occasionally such mortgages are made for financing crop production; the crop to be grown is given as security and the chattel holder has the right to all sales of the crop until the mortgage is paid in full.

Sometimes long-time notes are used to establish long-time credit facilities for farmers. A note is an unconditional written promise, signed by the maker, to pay, at a certain or determinable time in the future, a specific sum of money to the bearer or the designated payee on his order. Since a note is seldom supported by any specific security, one or more co-signers are usually required; if the individual borrowing the money does not pay, the co-signers are held liable.

2. *Short-time Credit.* Short-time credit is used to finance family living expenses and/or current production expenses during the crop season or farming year. The most common sources of short-time credit for farm use are local merchants and dealers, local banks, production credit associations, and personal loan companies. Because of the more risky nature of this type of

credit and the fact that often it is not secured by any formal collateral, interest costs are usually higher than for long-time credit.

The costs of short-time credit vary widely and sometimes are out of all proportion to the value received. Usually, merchant and dealer credit is relatively expensive for farmers and should be avoided. This is not due to any excessive profits which are made by the merchants or dealers but rather to the fact that their businesses are set up to sell groceries, feed, fertilizer, and supplies, and not to lend money; thus, they have greater losses and have to charge higher interest rates in compensation. The farmer will usually fare better by obtaining his short-time credit from sources which make it a business to lend money on an efficient basis. This means that the best sources are the local banks and production credit associations. Local personal loan companies also lend money to farmers to meet short-time credit needs, but, since most of these companies specialize in lending money to people who because of the lack of proper security cannot obtain it elsewhere, their losses are relatively large and interest rates charged by such companies are often excessively high in comparison to what the farmer would have to pay at the local bank or production credit association.

## An Example of Variations in Credit Costs

The operator of a farm needs a new tractor. He has $150 cash available to make a down payment. The dealer's price of the new tractor is $1,000, and the dealer has offered to allow $250 on the old tractor and to accept in full payment either $715 cash on delivery or $150 down and $100 per month for 6 months, with the first payment to be due 1 month from the time of purchase. This farmer can borrow the money at 6 per cent per year from the local bank on a series of six $100 notes. Another possibility is to borrow the amount needed from the local production credit association at 5 per cent interest with the tractor given as security on a chattel mortgage. Also, the money can be obtained from the local personal loan company if the farmer signs a note agreeing to make six monthly payments of $102 per month beginning 1 month after the $565 loan is made.

1. *Cost of Dealer Credit.*

| | |
|---|---|
| | $ 250 trade-in value of old tractor |
| plus | 150 cash payment when delivered |
| plus | 600 in six monthly payments |
| | $1,000 total cost of tractor using dealer credit |

If cash is paid for the tractor at the time of delivery, the cost would be:

| | |
|---|---|
| | $250 trade-in value of old tractor |
| plus | 715 total cash payment |
| | $965 total cash price of the tractor |

The difference between the cash price of $965 and the credit price of $1,000, or $35, represents the interest charge for the use of $565 for 1 month, $465 for 2 months, $365 for 3 months, $265 for 4 months, $165 for 5 months, and $65 for 6 months. This amounts to an average sum borrowed of $315 per month for 6 months for which $35 is the interest charge, which totals 11.1 per cent interest for 6 months or 22.2 per cent on an annual basis.

2. *Cost of Bank Credit.*

| | |
|---|---|
| | $715 cash needed to pay dealer |
| minus | 150 cash on hand |
| | $565 needed from bank (interest at 6 per cent per year, or ½ per cent per month) |

The interest costs are:

| | |
|---|---|
| $565 @ 0.005 = | $2.88 interest for first month |
| 465 @ 0.005 = | 2.32 interest for second month |
| 365 @ 0.005 = | 1.83 interest for third month |
| 265 @ 0.005 = | 1.32 interest for fourth month |
| 165 @ 0.005 = | 0.82 interest for fifth month |
| 65 @ 0.005 = | 0.33 interest for sixth month |
| Total of | $9.50 interest for the 6 months |

This amounts to an average interest charge of about 6 per cent per year.

3. *Cost of Production Credit Association Credit.* Total interest costs are:

| | |
|---|---|
| $565 @ 5% per year = | $2.35 interest for first month |
| 465 @ 5% per year = | 1.94 interest for second month |
| 365 @ 5% per year = | 1.52 interest for third month |
| 265 @ 5% per year = | 1.10 interest for fourth month |
| 165 @ 5% per year = | 0.69 interest for fifth month |
| 65 @ 5% per year = | 0.27 interest for sixth month |
| Total of | $7.87 interest for the loan |

This amounts to an average interest charge of about 5 per cent per year. In addition, however, most production credit associations impose a service fee which increases the total interest cost to a slight extent.

4. *Cost of Personal Loan Credit.*

$102 per month for 6 months ($612 in total payments)

| | |
|---|---|
| | $612 total payments |
| minus | 565 actual amount borrowed |
| | $ 47 total amount paid as interest |

This amounts to an average interest charge of about 15 per cent for the 6 months or 30 per cent on an annual basis.

This example indicates a variation in interest charges of 5 to 30 per cent, depending on the source of the credit.

Each of the credit sources illustrated has certain advantages and disadvantages. Dealer credit is probably most convenient for many farmers; it requires no security other than the tractor purchased, and, if the tractor is unsatisfactory, the debt can be liquidated by returning it to the dealer and taking the loss on the payments made. Dealer credit may insure more efficient servicing if it is needed; on the other hand, this type of credit is usually costly and the item purchased may be reclaimed if even one payment is overdue.

Local bank credit is relatively cheap, and it is usually more convenient than other types of inexpensive credit. However, the local banker usually has little regard for the weather, and payments must be made on time or other property on the farm may be attached. Also, the usual 60- to 90-day short-term bank loan is not adapted to the farmer's needs for production credit for a crop season.

Production credit association loans, as well as long-time Federal Land Bank mortgage loans, are adapted to the needs and timing of farming operations. Such loans are usually about the cheapest source of credit. These types of credit, however, are somewhat inconvenient, as several inspections may have to be made and definite security must be mortgaged. Besides this, a certain part of the amount borrowed is unavailable since it must be used to purchase stock in the cooperative.

The major advantage of the personal loan companies as a source of credit is the ease of obtaining the money. This advantage, however, is more than offset by the high cost of such credit.

## The Inventory as a Tool in Obtaining Credit

The wide variation which exists in credit costs and the kinds of repayment provisions has been indicated clearly. The efficiency with which the farmer obtains and uses credit is one of the important factors determining his financial success or failure in the operation of the farm business. The inventory furnishes an important tool whereby the producer can attain this desired efficiency.

The less expensive and more reliable sources of credit are indicated to be the Federal Land Bank and local banks for long-time credit, and production credit associations and local banks for short-time credit. These agencies are efficient credit institutions because they specialize in credit, take no unnecessary risks, operate on a purely business basis, and expect the farmer to do likewise. They expect the farmer to apply for credit as a businessman, with all the facts about his business and his plans neatly summarized and outlined. The best way the farmer can accomplish this requirement is to take an annual inventory and prepare an annual credit statement to file with his local banker or keep on hand for immediate reference if credit is needed during the year. An example of a credit statement is given herewith.

A credit statement is a summarized list of what the farmer owns and what he owes, together with certain other additional information, such as the amount of life and fire insurance carried,

FARM CREDIT STATEMENT * OF________________

BUSINESS________________ ADDRESS________________

TO________________ BANK OF________________

I, the undersigned, make the following statement of all my assets and liabilities at the close of business on the date named below and give other material information for the purpose of obtaining from you advances on notes and bills bearing my signature or endorsement, and for obtaining credit generally upon present and future applications.

FINANCIAL CONDITION AT CLOSE OF BUSINESS ON THE________________ DAY OF________________ 19____

| ASSETS (WHAT I OWN) | Omit Cents | LIABILITIES (WHAT I OWE) | Omit Cents |
|---|---|---|---|
| Farm lands and buildings | $ | Mortgage loans on farm | $ |
| At present reasonable value, not deducting mortgages | ______ | Not including notes secured by mortgages | ______ |
| Other real estate | | Mortgage loans on other real estate | |
| At present reasonable value, not deducting mortgages | ______ | Not including notes secured by mortgages | ______ |
| Trucks, tractors and automobiles | | | |
| At present reasonable value | ______ | Balance owing on land contract | ______ |
| Other farm machinery and equipment | | Notes payable to dealers and merchants | |
| At present reasonable value | ______ | Not covered by security | ______ |
| | | Notes payable to dealers and merchants | |
| | | Covered by security described below | ______ |
| Purebred cows | | | |
| No.______ Breed______ | ______ | ______ | ______ |
| Grade cows | | | |
| No.______ Breed______ | ______ | ______ | ______ |

Purebred bulls
No.__________ Breed__________ ________
Grade bulls
No.__________ Breed__________ ________
Heifers and yearlings
No.__________ Breed__________ ________
Calves
No.__________ Breed__________ ________
Sheep
No.__________ Breed__________ ________
Hogs
No.__________ Breed__________ ________
Laying hens and roosters
No.__________ Breed__________ ________
Pullets
No.__________ Breed__________ ________
Broilers
No.__________ Breed__________ ________
Chicks
No.__________ Breed__________ ________
Other poultry
No.__________ Description__________ ________
______________________________ ________
Horses
No.__________ Breed__________ ________
Colts
No.__________ Breed__________ ________

Notes payable to banks
Not covered by security ________
Notes payable to banks
Covered by security described below ________
______________________________ ________
______________________________ ________
Notes payable to Production Credit Association
Covered by security described below ________
______________________________ ________
______________________________ ________
Notes payable to relatives and friends
Not covered by security ________
Notes payable to relatives and friends
Covered by security described below:
______________________________ ________
______________________________ ________
Notes and loans payable to others
Not covered by security ________
Notes and loans payable to others
Covered by security described below: ________
______________________________ ________

* Farm CR 114, *Farm Credit Statement*, form suggested by Federal Reserve Bank of New York.

| Assets (What I Own) | Omit Cents | Liabilities (What I Owe) | Omit Cents |
|---|---|---|---|
| Harvested crops held for sale | $ | | $ |
| At present selling value | ________ | | ________ |
| Harvested crops for farm use | | Accounts payable | |
| At present value | ________ | Store and other accounts not covered by notes | ________ |
| Growing crops | | Rent owed by me | |
| At cost | ________ | Due but unpaid | ________ |
| Feed, seeds, fertilizer, supplies, etc. | | Interest owed by me, due but unpaid | |
| At cost | ________ | On mortgages, loans, notes, etc. | ________ |
| Accounts receivable | | Taxes and assessments | |
| Good and collectible | ________ | Due but unpaid | ________ |
| Notes and loans receivable | | Storage owing on goods in warehouses | |
| Good and collectible | ________ | Payable before release of goods | ________ |
| Cash surrender value of life insurance | | Loans from life insurance companies on life | |
| Without deducting any loans against policies | ________ | policies | ________ |
| Stocks, bonds, certificates of indebtedness, etc. | | Other debts | |
| At present market value | ________ | Description: | |
| Cash on hand and in banks | | | |
| Including savings accounts | ________ | | ________ |
| Personal property and other assets | | Total liabilities | $________ |
| Description: | | Net worth | |
| | ________ | Total assets less total liabilities | ________ |
| Total assets | $________ | Total liabilities and net worth | $________ |

Contingent Liabilities: I am liable on notes of my customers, which I have endorsed and discounted with banks, amounting to $________________; on unpaid notes endorsed or guaranteed by me as an accommodation to others $________________; on bail bonds $________________. Other contingent liabilities, as described: $________________________________________________________________.

LOCATION AND DESCRIPTION OF FARM: Located in Town of ____________, County of ____________, State of ____________, on ____________ Road ______ miles from nearest village or city, which is ____________.
Assessed tax value: $____________; total acres: ____________; number of acres cultivated: ____________; land class: ____________; kind of road: ____________; name and location of milk plant used: ____________.

TITLE TO FARM AND OTHER REAL ESTATE: The legal and equitable title to all the real estate listed in this statement is solely in the name of the undersigned, except as follows: ____________

FIRE INSURANCE: Main dwelling: $____________; main barn: $____________; other buildings: $____________; livestock: $____________; produce: $____________; machinery: $____________; household goods: $____________; auto and truck: $____________.

LIABILITY INSURANCE (auto and truck): Personal injury: $____________; property damage: $____________.

LIFE INSURANCE: Face amount of policies: $____________; name of insured: ____________; name of beneficiary: ____________; name of insurance company: ____________.

TAXES (last tax year): state, county, & town: $____________; school: $____________; other real estate taxes: $____________.

PLEDGE OF FUTURE INCOME: I have not pledged my future income, except as follows: Canning crops $____________; milk check $____________. To whom pledged: ____________.

SUITS, JUDGMENTS, AND OTHER LEGAL ACTIONS: I have outstanding or pending against me no suits, judgments, or other legal actions, and to the best of my knowledge no legal actions are to be started against me, except as follows: ____________

PERSONAL STATUS: I am aged ______ years. Marital status (single, married, etc.) ________. No. of dependents: Wife's (or husband's) name: ____________. The following members of family help on farm: ____________.

OTHER BUSINESS INTERESTS: I have no business interests other than my farm, except as follows: ____________.

CROP OPERATIONS:

| Last Crop Year | | | | | This Crop Year | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Yield * | | | | | Expected Yield * | | |
| Kind of Crop | Acres | Per Acre | Total | Total Sales | Crops Growing or to be Grown | Acres | Per Acre | Total | Expected Sales |
| | | | | $ | | | | | $ |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

* Stated in appropriate units, such as tons, bushels, pounds, etc.

The following information should be submitted, if available:

CASH INCOME AND OUTGO DURING PAST YEAR, beginning ________, 19___, and ending ________ 19___.

CAUTION: List below only actual cash which came in or went out last year. Do not list parts of purchases unpaid for on above date.

### CASH INCOME DURING PERIOD

| | |
|---|---|
| Sale of: | |
| Crops | $______ |
| Livestock | ______ |
| Milk | ______ |
| Other dairy products | ______ |
| Eggs | ______ |
| Poultry | ______ |
| Other farm products | ______ |
| Real estate | ______ |
| Securities | ______ |
| ______ | ______ |
| Cash Received from: | |
| Outside work | ______ |
| Government payments | ______ |
| Interest | ______ |
| Bank loans | ______ |
| Other loans | ______ |
| ______ | ______ |
| Other cash income (describe)______ | ______ |
| | ______ |
| Total cash income | $______ |

### CASH OUTGO DURING PERIOD

| | | | |
|---|---|---|---|
| Hired help ____ months | $______ | Electricity and phone | $______ |
| Feed and grain | ______ | Family medical exp. | ______ |
| Hay and straw | ______ | Family education | ______ |
| Seeds | ______ | Clothing, etc. | ______ |
| Fertilizer, sprays, etc. | ______ | Food bought | ______ |
| Gasoline and oil | ______ | Life ins. premiums | ______ |
| Fire insurance | ______ | Misc. personal expenses | ______ |
| Taxes and assessments | ______ | ______ | ______ |
| Interest | ______ | ______ | ______ |
| Truck and auto licenses | ______ | Bank loans paid | ______ |
| Dues and fees | ______ | Mortgages paid | ______ |
| Rent | ______ | Other loans paid | ______ |
| Mach'y repairs and tires | ______ | ______ | ______ |
| Improvements and repairs | ______ | Money loaned to others | ______ |
| Livestock paid for | ______ | ______ | ______ |
| Poultry paid for | ______ | ______ | ______ |
| Machinery paid for | ______ | ______ | ______ |
| Auto or truck paid for | ______ | ______ | ______ |
| Real estate paid for | ______ | ______ | ______ |
| Securities paid for | ______ | ______ | ______ |
| | | | ______ |

Total cash outgo during period (total of both columns) $______

I, the undersigned, hereby certify that the figures, information, and statements contained in this credit statement, both printed and written, have been carefully read by me before signing and are true and give a correct showing of my financial condition on the date stated. In the event of any material change in my financial condition, I agree to notify said bank immediately in writing.

Signed this ________ day of ________, 19___. Signature: ____________

(If this is a joint statement, all persons at interest should sign.) Signature: ____________

real estate taxes and other fixed costs payable during the following year, personal status, other business interests, and similar factors reflecting his credit standing. Most lending agencies will supply copies of the required form on which the credit statement can be prepared from the inventory. Many farm record books published by the different land-grant colleges include copies of farm credit statements which will be acceptable to all credit agencies. In the absence of these forms, usually a simple copy of the summarized farm inventory will suffice.

## EXERCISE 6

The following sources of credit are commonly used by farmers in financing the farm business.

A. Long-time financing:

1. Mortgage, due on demand, interest at 5 per cent per year on the unpaid principal.
2. First mortgage, limited to 50 per cent of the appraised value of the land and buildings, interest at 4½ per cent per year; 5 per cent of the loan must be left on deposit as stock in the cooperative which is lending the money; principal to be repaid in amounts which, with interest on the unpaid balance, will make total payments on both interest and principal equal each year throughout the period of repayment. The period of repayment is from 20 to 33 years. Repayment of interest and principal amounts to 7 per cent on 20-year loans and 5½ per cent on 33-year loans.
3. First or second mortgage together with prior liens cannot exceed 75 per cent of the appraised agricultural value of the land and buildings; interest at 5 per cent per year on the unpaid balance; principal and interest to be repaid in equal amounts over the period of the loan, which shall not exceed 10 years.
4. Note; due on demand, interest at 6 per cent per year.
5. Note; due in 24 months, interest at 7 per cent per year.
6. Note; discounted at the time of the loan, due in 24 months, interest at 7 per cent per year.
7. Mortgage, interest at 6 per cent per year, principal payable in equal installments over a period of 10 years.
8. Chattel mortgage, security usually required is a first mortgage on crops and/or personal property; due on a definite date not exceeding 3 years; interest at 6 per cent per year; 5 per cent of the loan must be left on deposit for the purchase of stock in the cooperative which is lending the money.

B. Short-time financing:

1. Note; due in 3 months, interest at 6 per cent per year; at least 10 per cent of the loan must be left on deposit with the lending agency during the life of the loan.
2. Note; due in 3 months, discounted at 6 per cent at the time of the loan.
3. Note; due in 3 months, interest at 6 per cent per year.
4. Price per ton of feed is $43 if not paid for at the time of purchase; cash discount, $3.00 per ton; if purchased on credit, the bill must be paid by the farmer at the end of each calendar month. (Assume feed is purchased each day throughout the month.)
5. The purchase of a car through a financing corporation. Rates per $100 cost on the basis of full cash payment at the time of purchase are as follows:

| | |
|---|---|
| Down payment | $25.00 |
| 18 monthly payments, per month | 4.60 |

6. Installment purchase of a milk cooler:

| | |
|---|---|
| Cash price of the cooler | $100.00 |
| Added for easy payment plan | 10.00 |
| Deposit required with the order | 8.60 |
| 12 monthly payments due, per month | 8.45 |

7. Personal finance company loan:

   $100 cash, 20 months to pay; pay $1.58 per week for only 90 weeks

*Requirements:*

1. Compute the interest rates for funds obtained in each way. The interest rate should be expressed as the per cent per year on the funds actually available to the farmer in financing his business. The answer should be carried to the nearest ½ per cent. The method of calculation should be shown with each answer.
2. Compute the annual interest cost on $1,000 borrowed each way on the basis of interest rates as obtained in 1.
3. For both long-time and short-time credit sources, rank the various methods from the least to the most desirable, considering the interest rate and the payment provisions, assuming that a farmer could obtain credit in any of the ways listed.

*Suggested procedure for calculating rate of interest:*

First, compute the amount in dollars representing interest or its equivalent that must be paid per year. Second, compute the average amount of money available for the use of the borrower, converted to its equivalent for a 12-month period. Third, divide the amount of money available for use into the interest costs to obtain the interest rate.

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CHAPTER 7

# Farm Cash Accounts

The major record discussed previously was the farm inventory, or complete statement of financial condition. The second most important farm record, based on the relative value of the record in comparison to the ease of keeping and using the record, is the farm cash account. The farm inventory is a record of financial condition at a particular time; the farm cash account is a record of the results of the operation of the farm over a period of time, usually one season or one crop year.

## Importance of Cash Accounts

There are many kinds of records and accounts which are useful in measuring the results of operation for a period of time. A complete cash account, however, is the simplest and easiest record and is the one used most commonly by farmers in all areas. On most farms in the United States, a cash account of some sort, with or without an inventory at the end of each year, is the only record kept. Thus, in spite of the many limitations of such accounts, the student of farm accounting who expects to be of some assistance to farmers in their accounting problems must become thoroughly familiar with the organization, methods of keeping, analysis, and use of farm cash accounts.

The farm management practices to be used in a given community should be those employed by the more experienced and successful farmers in the area. This general conclusion is drawn from the fact that, after a period of time, most of the farmers in the area adopt those enterprises and practices that have proved through years of trial and error to be the most useful and profit-

able and discard those that were unsuccessful. Farmers who do not apply these proven practices usually go bankrupt.

If this type of analysis is applied to the determination of the best farm records for a given agricultural area, the conclusion almost always will be drawn that a cash account, with or without a farm inventory, is probably the best record system for most farmers. Such a system is used more generally than the more complex types of records and accounts commonly suggested to farmers by commercial accountants and businessmen.

The double-entry system of bookkeeping used in most businesses provides a system of checks and balances and more comprehensive data—in short, a more accurate and complete picture of the firm's operation for a given period of time—than is possible with the simple inventory and cash account records. However, many farmers, after attempting the complex double-entry system, have found that they spent so much of their time keeping books that they neglected their major job, farming. This does not mean that no farmers should use the double-entry system of records; such records will furnish those farmers who have the time and ability to keep them more valuable information than any other system. The primary job of the average farmer is physical labor in the production of his crops, livestock, and livestock products. This requirement, together with the lack of special accounting training, should be recognized in suggesting farm records for general use; and the complete farm inventory and the farm cash account probably represent the minimum amount of records needed by any farmer and the maximum that most farmers will be able to keep and use.

## Types of Cash Accounts

1. *Incomplete Cash Records.* There are many incomplete cash records for assembling facts needed in the operation of farms. One of the most important of them is the farm diary record. The farm diary, like any other, is a daily recording of all important events; on the farm this includes the weather report, the condition of the back pasture, freshening dates, and unusual events of the day, as well as the important cash receipts and expenses from all sources. The diary is the ancestor of the more formal "jour-

nal" record of the usual double-entry bookkeeping system, in which expenses and receipts are listed in chronological order and later transferred to proper ledger accounts. On the ordinary farm, however, the farm diary may be an interesting record if the operator desires to keep one, but it is rather inefficient as a source of organized facts for assisting the producer to improve his efficiency. The usual diary is disorganized, includes all sorts of personal data intermingled with financial transactions, and is difficult, if not impossible, to analyze. Other incomplete but occasionally useful cash accounts include barn-door records, wire-hook cash records on which receipts are filed, and kitchen-table, wallpaper and tablecloth records. Such records are not only incomplete but also rather unstable.

The one incomplete cash account record which should be kept by every farmer regardless of the other records of the farm is the checkbook stub and bank balance record. Most farmers today not only can afford the small costs of a checking account—they cannot afford to be without these services. A canceled check is a foolproof receipt, and the bank record furnishes a valuable means of comparison with other records. Although personal and business expenses are intermingled in the usual checking account, the accurately kept checkbook record when reconciled each month with the bank statement supplies needed information that is not furnished by any other record.

2. *Complete Cash Records.* Three different kinds of complete cash records are used to assemble data on farm financial operations over a period of time. The first is the strictly farm business cash record, which is a summary of all cash receipts from the farm business and all cash expenses incurred for farm business purposes. The farm business cash record omits all personal cash expenses and all non-farm cash income; the objective of this record is to measure changes in the farm business only as far as cash transactions are concerned. The second is the strictly personal cash record, which is a record of all personal expenses for the farm family, excluding all the farm costs, and usually a recording of the cash income from all sources, regardless of whether the income is from farm or non-farm sources. The third is the complete cash record including expenses for all items, both

personal and business, and income from all sources recorded according to source types.

The complete cash record is more useful and valuable than the strictly farm cash record or the personal cash record but requires much more time, effort, and attention to details than the average record of cash farm receipts and expenses only. For most farmers, the many small personal cash transactions are not nearly so important as the cash farm costs and returns, and, at least at the beginning, the record should be restricted to solely farm cash transactions. The personal record supplies interesting data; but most farm families spend what they have, and a record of these expenditures will be of little value in increasing the amount of cash available for family uses in future years; thus, it should be kept only if there is a special need for this added information.

## *How to Keep the Farm Cash Record*

Many kinds of farm cash account books are available for use by farmers. Most of the colleges of agriculture have published books containing space and directions for keeping and analyzing a farm cash account. Most of these books have special columns for each of the different important items of farm expense, such as feed, seed, hired labor, and equipment; and important receipt items, such as crops, milk, eggs, and other sales. Also, certain farm equipment companies and feed distributors publish similar cash account books which are available to farmers without charge. All these books include detailed directions for keeping records.

Unfortunately, however, the farm accounting problems of no two farmers are exactly alike, and no farm record book can be prepared that will fit the exact needs of each farmer. The many prepared cash farm record books serve best as a guide in setting up the exact record needed by the individual producer and in keeping and using the record after it has been designed.

The best procedure is to obtain one or more of these prepared cash record books, study them carefully for ideas and suggestions, and then outline the kind of cash records that are needed for the particular farm business in question. If the outline indicates that

one of the available books will fit the needs, it should be used and minor alterations made if necessary. If the outline indicates that none of the books is suitable, a sheaf of lined paper can be placed in a loose-leaf folder, with tabs on the pages corresponding to the different headings in the outline, and the record is ready for use. It is generally preferable to allow at least one full page for each month's transactions, and the page should provide space for the date, a description of the item, the volume, and the amount of cash received or paid.

The most difficult problem in keeping any record of results for a period of time is the development of the habit of recording the transactions immediately after they occur so that nothing is omitted. Most farmers find the problem easier if they set aside a small period of time each day for recording the day's transactions and gradually develop the habit of bringing the record up to date each day. A fifteen-minute period immediately after the evening meal has been found by many farmers to be sufficient for keeping the usual cash account of farm receipts and expenses.

## The Classified Cash Account

The classified cash account is a modified and more complicated form of the average cash record. It is an expansion of the farm cash account developed to give more detailed facts about the farm business than can be obtained from the simple cash record. The objective of the classified cash account is to break down the cash record into small units so that a better or more detailed indication of the different sources of receipts and different items of expense can be obtained. It is an attempt to make the cash record of receipts and expenses give important facts about the different farm enterprises, as well as a general summary of cash costs and returns from the entire farm business.

A classified cash account is generally of more value than a very simple one- or two-column cash record because it provides more detailed information about the farm business. As long as the expense and receipt items are classified according to reasonable divisions which are defined readily and clearly and are not divided into too many different items, such a record does not require special accounting training or significantly more time

Form 1. Classified Cash Receipts

| | | 1 | | 2 | | 3 | | 4 | | 5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Item and Quantity | Total Receipts | | Crops | | Livestock | | Livestock Products | | Other Income | |
| | | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |

(One or more pages for each month is required; additional columns may be added if a more detailed breakdown of receipts is desired.)

Form 2. Classified Cash Expenses, Crops

| | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Item and Quantity | Total Expense | | Corn | | Potatoes | | Wheat | | Hay | | Other Crops | |
| | | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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(One or more pages for each month is required; additional columns may be added or substitutions made for the more important crops on a specific farm.)

### Form 3. Classified Cash Expenses, Livestock

| Date | Item and Quantity | 12 Total Expense | | 13 Dairy Cattle | | 14 Other Cattle | | 15 Hogs | | 16 Poultry | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ |
| | | | | | | | | | | | |
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(One or more pages for each month is required; additional columns may be added or substitutions made for the more important livestock enterprises on a specific farm.)

### Form 4. Classified Cash Expenses, General

| Date | Item and Quantity | 17 Total Expense | | 18 Labor | | 19 General Repairs | | 20 Power Equipment | | 21 Miscellaneous | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ |
| | | | | | | | | | | | |
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(One or more pages for each month is required; additional columns may be added or substitutions made for special general expense items on specific farms.)

FORM 5. SUMMARY OF RECEIPTS BY MONTHS

| Month | Total Receipts | | Crops | | Livestock | | Livestock Products | | Other Income | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ |
| January | | | | | | | | | | |
| February | | | | | | | | | | |
| March | | | | | | | | | | |
| April | | | | | | | | | | |
| May | | | | | | | | | | |
| June | | | | | | | | | | |
| July | | | | | | | | | | |
| August | | | | | | | | | | |
| September | | | | | | | | | | |
| October | | | | | | | | | | |
| November | | | | | | | | | | |
| December | | | | | | | | | | |
| | | | | | | | | | | |
| Total for the year | | | | | | | | | | |

FORM 6. SUMMARY OF EXPENSES BY MONTHS

| Month | Total Expenses | | Crops | | Livestock | | General | |
|---|---|---|---|---|---|---|---|---|
| | $ | ¢ | $ | ¢ | $ | ¢ | $ | ¢ |
| January | | | | | | | | |
| February | | | | | | | | |
| March | | | | | | | | |
| April | | | | | | | | |
| May | | | | | | | | |
| June | | | | | | | | |
| July | | | | | | | | |
| August | | | | | | | | |
| September | | | | | | | | |
| October | | | | | | | | |
| November | | | | | | | | |
| December | | | | | | | | |
| Total for the year | | | | | | | | |

than the simple cash account. In some cases, however, attempts to show the groupings or classifications in too much detail make the record confusing with the final result of a less instead of a more useful record. In general, not more than six to ten different classifications of receipts and expenses should be attempted in preparing and keeping a classified cash account, and the number should be held below this amount, if possible.

A brief outline of the essential pages of a classified cash account for a farm business is shown in Forms 1–6.

This outline should be used as a general guide and not as a rigid form which cannot be changed in outlining a classified cash account. If a cash record of personal expenses is desired, a record similar to Form 2 can be prepared based on major personal and family expenses, such as food, clothing, automobile, medical, dental, and travel.

A frequent point of misunderstanding in the recording of cash transactions involves the method of handling exchanges of property or trades in which no cash is involved. Farmers in some areas often trade eggs for feed or groceries, exchange grain for feed or seed, or make similar non-cash transactions. If the cash account is to be of most value, all these financial changes should be recorded as if they were cash sales and cash expenses. For instance, a calf valued at $20 which is traded for 100 pounds of clover seed should be recorded as a cash sale of the calf and a cash purchase of the seed, listing the same amount in each case.

## *Limitations of the Cash Account*

The cash account and the classified cash account are valuable farm records for measuring the results of operating the farm as a unit over a period of time. Because of the general nature and the relative simplicity of such records, however, they are subject to certain limitations. The cash account does not provide facts which will show the gain or loss or any measure of true profit for the farm as a whole for any specific year or given period of time. In the usual cash account, changes in inventory values are not considered in the receipts or the expenses; neither are items purchased on credit or credit sales recorded. Transactions in the cash account record are restricted to those of cash only.

Thus, a farmer might purchase feed throughout the year to feed beef cattle, and, if he did not sell cattle for cash during the year, his account would show high feed costs but no income, even though the inventory value of the cattle increased much more than the feed cost during the year. On the other hand, if the feed was purchased on credit and not paid for during the year and the cattle were sold, the usual cash account would show large receipts from the cattle sale but no offsetting expenses for feed.

Also, the cash account does not show any measure of return or the gain or loss for the different enterprises which make up the farm business. The cash receipts for the different farm enterprises can be obtained easily from the classified cash account, but the cash expenses in the usual cash account cannot be divided accurately and allocated to the individual enterprises. On most farms, general expenses such as labor, truck and tractor costs, taxes, insurance, and repairs make up about one-half the total farm costs for the year, and the cash account does not furnish sufficient detailed information so that these indirect cost items can be broken down into direct charges to each enterprise.

## EXERCISE 7 *

1. Outline on sheets of lined paper a classified cash account including the following groups of accounts:
   (*a*) Income accounts for: (1) cotton sales, (2) other crop sales, (3) dairy product sales, (4) egg sales, (5) cattle sales, (6) hog sales, (7) sheep sales, (8) poultry sales, (9) horse sales, and (10) other income.
   (*b*) Expense accounts for: (1) farm buildings, (2) small machinery and equipment, including repairs, (3) tractor, (4) auto and truck, (5) feed, (6) crops, (7) taxes, interest, and rent, (8) labor, (9) livestock purchased, (10) miscellaneous livestock expenses, (11) other miscellaneous farm expenses, and (12) personal and family expenses.
   (*c*) Summary of receipts from different sources by months.
   (*d*) Summary of expenses for different items by months.

* If desired, this exercise can be simplified by omitting all transactions identified by the asterisk since this star indicates that a similar transaction has been listed previously. This procedure will provide practice in recording each different kind of transaction but will not show the entire record for the year.

2. Using the outlined record form prepared in 1, enter the individual expense and income items of Farm 8 in the respective classified expense and receipt columns.
3. Compute totals for each column, by months, and transfer the monthly totals to the summary pages; complete the summary pages to determine the classified receipts and expenses for the year.

## RECEIPTS AND EXPENSES, FARM 8

January

9 Sold 5 doz. eggs @ 42¢
9 Sold 15½ lb. butterfat @ 52¢
11 Bought 1 plowshare $6
11 Bought 10 gal. of gas for car @ 30¢
11 Bought 5 qt. oil for car @ 40¢
11 Bought 300 lb. laying mash @ $4 per cwt.
11 Taxes: landlord $208
11 Paid taxes, $190 real and $16 personal
11 Paid interest and principal on mortgage, $400 principal and $80 interest
11 Bought roofing for poultry house $20
11 Bought 500 gal. gas for tractor @ 28¢
16 Sold 6 doz. eggs @ 42¢ *
16 Sold 15 lb. butterfat @ 56¢ *
25 Paid 10 days' hired labor @ $2
25 Bought 30 bu. oats for seed @ 60¢
25 Paid insurance for farm buildings $30
25 Received breeding fees $6
25 Bought car license, $12; bought tractor license $13
30 Sold 7 doz. eggs @ 44¢ *
30 Sold 16 lb. butterfat @ 60¢ *
30 Bought 50 gal. oil for tractor @ 28¢ per qt.
30 Bought 20 lb. formaldehyde for seed oats @ 20¢
30 Paid grocery bill $40

February

1 Paid for shoeing horses $8.50
2 Paid veterinary for treating sick cow $10
2 Long-distance telephone call about seed oats $2
2 Traded tractors—received $770 trade-in allowance on a $1200 tractor —made note for balance.
2 Bought brooder $30
2 Bought 200 day-old chicks @ 20¢
2 Bought 30 gal. kerosene @ 16¢, ⅓ for brooder, ⅔ for household
2 Sold 15 lb. butterfat @ 60¢ *
2 Sold 6 doz. eggs @ 48¢ *
4 Bought 200 lb. stock salt @ 4¢
4 Bought 2 bunches bailing wire @ $3.60

## RECEIPTS AND EXPENSES, FARM 8 (Continued)

February
8 Bought 900 lb. hog feed @ $5.20 per cwt.
8 Bought 300 lb. chick feed @ $7 per cwt.
8 Bought 2 bu. alfalfa seed @ $16
8 Bought 3 bottles alfalfa inoculation @ $1.60
20 Sold 20 lb. butterfat @ 66¢ *
20 Sold 15 doz. eggs @ 46¢ *
20 Bought 1 spool wire $8
22 Bought 100 posts @ 24¢ each
27 Sold 8 doz. eggs @ 40¢ *
27 Sold 15 lb. butterfat @ 60¢ *
27 Paid grocery bill $44 *

March
1 Bought 6 head yearlings @ $20. Paid $60 cash and agreed to pay $70 (principal and interest) September 1.
1 Roan cow died, value $90
1 Paid wagon repairs $5
5 Harness oiling and repairs $5.50
5 Sold 25 lb. butterfat @ 54¢ *
5 Sold 16 doz. eggs @ 34¢ *
12 Bought 2 tires for car $52
12 Bought gasket for tractor $1.50
12 Bought black cow, weight 1020 lb., paid $108
20 Sold 22 lb. butterfat @ 52¢ *
20 Sold 18 doz. eggs @ 36¢ *
20 Sold 14 hens, weight 5½ lb., @ 36¢ per lb.
30 Sold 10 doz. eggs @ 34¢ *
30 Sold 18 lb. butterfat @ 54¢ *
30 Sold 20 chickens, weight 2½ lb. each, 44¢ per lb.*

April
1 Paid hired labor $24 *
2 Paid telephone for 3 months @ $3 *
2 Bought 4 balls twine $4
2 Bought 200 lb. chicken feed @ $4.50 per cwt.*
2 Sold 4 market hogs, weight 1040 lb. @ $16 per cwt.
8 Sold pet roan mare $150
8 Sold 20 lb. butterfat @ 56¢ *
8 Sold 22 doz. eggs @ 36¢ *
8 Bought groceries $24 *
8 Bought 290 lb. oyster shells @ 2¢
10 Bought Pete, black mule, cost $150
10 Bought Beck, blue mule, cost $150
10 Traded in Ben, black horse, for $160 and paid the difference
13 Bought whitefaced cow from John King $80 *

April
13 Paid F. A. Newman for labor $24 *
13 Sold 18 lb. butterfat @ 58¢ *
13 Sold 16 doz. eggs @ 36¢ *
20 Paid William Bradley for labor $10 *
20 Paid blacksmithing $6
28 Cultivator repairs $5
29 Sold 15 doz. eggs @ 32¢ *
29 Sold 20 lb. butterfat @ 56¢
29 Bought 65 gal. kerosene @ 20¢, 60 gal. for tractor and 5 gal. for brooder.

May
1 Bought new linoleum for kitchen $40
5 Sold 30 lb. butterfat @ 52¢ *
5 Sold 20 doz. eggs @ 30¢ *
5 Bought 1 ton fertilizer @ $72
8 Bought 600 lb. mill feed @ $4 per cwt.
12 Bought 8 cultivator sweeps @ $1.20
12 Bought 8 lb. nails @ 16¢
12 Bought 10 lb. staples @ 16¢
18 Sold 4 hogs, weight 1,100 lb. @ 16.20 per cwt.*
25 Sold 20 lb. butterfat @ 44¢ *
25 Sold 10 doz. eggs @ 34¢ *
25 Sold 10 chickens, 2½ lb. each, @ 40¢ per lb.*
28 Bought 30 gal. gas for car @ 30¢

June
1 Sold 20 lb. butterfat @ 42¢ *
1 Sold 12 doz. eggs @ 38¢ *
5 Sold 129 bu. oats @ 66¢
5 Bought 10 lb. grease @ 30¢
15 Sold 22 lb. butterfat @ 40¢ *
15 Sold 14 doz. eggs @ 36¢
15 Paid doctor bill $16
15 Paid tractor note $500
20 Bought 300 gal. kerosene @ 16¢, 10 gal. for household use, 290 gal. for tractor
20 Paid horseshoeing $10 *
26 Sold 18 lb. butterfat @ 40¢ *
28 Bought 60 lb. binder twine @ 28¢
28 Received tractor gas refund $50
28 Paid breeding fees $4

July
1 Paid telephone for 3 months @ $3 *
1 Paid subscription to farm paper $8
6 Paid wheat threshing $120

## RECEIPTS AND EXPENSES, FARM 8 (*Continued*)

July
6 Paid oat threshing $42
6 Sold 10 doz. eggs @ 36¢ *
6 Sold 18 lb. butterfat @ 40¢ *
6 Sold 179 bu. wheat @ $1.64 per bu.
14 Paid for welding tractor hitch $4
16 Sold 21 lb. butterfat @ 38¢ *
16 Paid tractor note from last year $200 with $20 interest added
16 Sold 8 doz. eggs @ 36¢ *
20 Received oil lease money on 162 acres, $2 per acre
24 Sold 16 bu. barley @ 90¢
24 Bought 400 lb. dairy feed @ $5.50 per cwt. *
28 Bought 50 gal. of gas for car @ 30¢ *
29 Paid car repairs $50
29 Sold 600 bu. wheat @ $1.86

August
6 Sold 17 lb. butterfat @ 40¢ *
6 Sold 6 doz. eggs @ 32¢ *
8 Bought 1 gal. fly spray @ 50¢ per qt. (for cows)
8 Paid for mower repairs $12
10 Bought 12 gal. cylinder oil @ $1.42 for car and tractor; ½ for each
19 Sold 15 lb. butterfat @ 40¢ *
19 Sold 6 doz. eggs @ 30¢ *
25 Bought 500 lb. mill feed @ $4 per cwt.*
25 Bought 8 gal. red paint for barn @ $3
29 Received $80 for labor off the farm

September
1 Paid windmill repairs $16
1 Sold 4 tons of hay @ $24
1 Paid $70 on cattle bought in March
24 Paid cotton picking $18.70
24 Sold 4 yearlings @ $28 *
25 Paid cotton ginning $9.60
25 Sold 1 bale cotton and cottonseed $162.40
30 Dairy product sales for month $18 *
30 Egg sales for month $8 *

October
1 Paid telephone bill for 3 months @ $3 *
4 Sold 1 bale cotton $148.20
4 Paid ginning 1 bale cotton $9.50
12 Bought ¼ ton fertilizer @ $60 per ton *
12 Paid cotton ginning $74
12 Paid cotton picking, $104 *

October
20 Sold 14 bu. corn @ $1.60 per bu., landlord's share
20 Sold cotton and cottonseed $1800
28 Sold 6 steers (yearlings and two-year-olds) $280 *
30 Butterfat sales for month $20 *
30 Egg sales for month $6.40 *
30 Paid William Bradley $40 for month's salary (allowed $2 per day for board for month)

November
2 Paid fire and tornado insurance $17.70
6 Paid cotton ginning $29.60 *
8 Sold cotton and cottonseed $600
12 Bought oyster shells for chickens $4 *
12 Bought 2 pails for use in separating milk $4
12 Bought 4 chairs $20
18 Sold 3 calves $48
18 Sold 12 turkeys $60
18 Paid cotton picking $84 *
30 Dairy sales for month $31.60 *
30 Egg sales for month $14 *
30 Sold 400 bu. of wheat @ $1.56

December
1 Bought 300 lb. mill feed $15.60 *
2 Bought 5 gal. kerosene $1 household use
5 Received trade's day award $50
28 Bought groceries $32 *
30 Dairy sales $27.60 *
30 Poultry sales $16 *
30 Received $70 from house and lot in town
30 Received dividends from cooperative creamery $24.40
30 Received dividends from oil stocks $16.40
30 Received dividends from cooperative elevator $48
30 Labor of members of the family for year $400 (operator's labor not included)
30 Value of operator's labor for the year $1,200

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*Farm Accounting Record,* Peoria, Illinois, Keystone Steel and Wire Company.

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# CHAPTER 8

## The Use of Farm Cash Accounts

Facts obtained from farm cash accounts will supply much valuable information if the records have been kept and organized with a reasonable degree of accuracy. First, the cash account provides a basis for checking the total cash on hand and in the bank at any time. A complete cash account, or a farm cash account with one summary column for all personal expenses, can be used at the end of any week or any month as a running check on the cash receipts and cash expenses to date to determine without question the amount of cash available for future operations. For the beginner, frequent comparisons of the net cash balance determined from the cash account, and the net cash balance computed from the total cash on hand and in the bank, are desirable in order to check on the completeness of the records being kept. After experience has shown that the cash record does reflect accurate cash conditions, it can be used without the cash on hand and in the bank comparison, although it is desirable even for farmers with years of experience in keeping a cash account to make several checks each year in order to reconcile the cash account with the actual cash on hand.

Second, the record of cash farm expenses and cash farm receipts is both complete and yet the simplest record of farming operations acceptable for use in preparing federal income tax returns. Farmers have the choice of reporting receipts and expenses for income tax purposes on either the cash basis or the accrual basis, which is a record of the year's operations only, whether on a cash or credit basis. Because of the difficulty of keeping accrual records, most farmers prepare their income tax returns on the cash basis. They either estimate their cash re-

ceipts and expenses at the end of the year or prepare their summary from a farm cash account. It is relatively easy to estimate the farm receipts. These items are generally few in number during the year and, because they occur in fairly large sums, are easy to remember. The farm expenses, however, are very difficult to estimate; expenses occur almost every day of the year, and they include many numerous small-cost items that frequently are forgotten. Most farmers who make out their income tax returns on the basis of estimates at the end of the year underestimate their expenses and as a result pay a larger income tax. If used for no other purpose than for income tax reporting, the farm cash account will pay high returns in the savings made because of the more accurate tax return. Also, an income tax return based on an estimate is always subject to question, whereas accurate records are usually taken at face value.

Third, the cash account provides a complete record of receipts and expenses at any time. Any agricultural enterprise is somewhat risky because of changes in physical factors due to climate as well as the usual economic fluctuations in prices and costs. Occasionally, farming plans must be altered immediately in order to adjust to changing physical or economic conditions. A cash account provides the facts needed to make these revisions on a sounder basis after due consideration has been given to the expenses and receipts; it also supplies the facts needed to make an earlier and more accurate appraisal of changes that are contemplated. A frequent check of receipts compared with expenses will save time and money.

Fourth, the summarized cash account of the farm business, if kept and grouped on a classified basis, will provide an indication of the relative importance of the receipts and expenses from different sources. Because of the relative simplicity of the ordinary cash account, it cannot be used as a basis for establishing the relative profitableness of the different enterprises, but the classified receipts, compared with the classified expenses, will indicate major differences in enterprise costs and returns.

Fifth, and most important, the summarized classified cash account of the farm business provides the basis for a simple study and analysis of the farm business. The major objective of an analysis of any business is to provide a more intelligent basis for

future planning. The farm cash account is one of the simplest but still fairly complete farm records that can be used for this purpose. A cash account will not supply all the detailed facts needed for a very complete analysis of the entire farming operation or of any one of the many farm enterprises. A cash account is a brief, simple record of cash transactions involving the farm business as a whole and does not provide the detailed information needed for a study of all the different internal operations of the farm. Such a record, however, will supply much information of value in planning the future operations of the farm business.

## The Analysis of Farm Cash Accounts

In order to utilize to the fullest the farm cash account as a basis for sound planning of the future operation of the farm business, the record for the year must be analyzed to determine the strong and weak points of the farm business as indicated by the record. Some of the more important points of the analysis are:

1. *Comparison of Expenses with Receipts.* Business success in farming, or in any other occupation, depends on the ability to spend a little less money than is taken in. No business can succeed over a period of years without following this policy. A frequent check of the cash expenses in comparison with the cash receipts will help the farmer to plan his spending in accordance with his income. A comparison of cash expenses and receipts, however, is not as useful for this purpose as a comparison of all expenses and receipts combined with inventory changes, but it is valuable if these other changes are kept in mind while making the analysis. Also, a classified farm cash account will aid in indicating the difference between cash receipts and direct cash expenses for the major enterprises on the farm. Although the classified farm cash account does not supply sufficient information to determine the exact profit or loss from the farm business as a unit or for any one of the different farm enterprises, an excess of direct expenses over receipts for any one enterprise is a clear indication that the enterprise is not proving to be profitable. If an enterprise does not return sufficient income to pay the direct cash expenses, it will be even less profitable when all costs are considered.

2. *Comparison of Large Expense Items.* An analysis of the few relatively large single items of expense is needed each year in order to review the costs of these articles in comparison with the usefulness after the purchase is made. All farmers make mistakes; the efficient farmer is the one who avoids making the same mistake more than once, and a frequent check on his major expense items will help to avoid similar mistakes in the future. On many farms, the keeping of a cash record of the costs of the workstock or truck considered from the point of view of their usefulness in comparison with the amount for which these same services could have been hired will result in savings in costs for such items in future years.

3. *Comparison of Cash and Credit Costs.* A brief check on the final cash costs of certain farm expense items when purchased on credit as compared with cash payments at the time of purchase is a valuable method of determining the true costs of buying on credit. Such a study of the typical cash account will indicate the difference between the final feed bill, for instance, when the feed is purchased on account, with the usual dollar-or-more-a-ton markup, and the costs for the same quantity and quality of feed if the discounts offered are utilized by paying cash for the feed. A cash record will point out clearly some of the costs of buying on credit and will provide food for thought concerning the way in which these credit costs can be reduced.

4. *Comparison of Prices Received under Different Marketing Methods.* Most farmers have several possible means of marketing their major farm products. The most efficient is the one which gives them the greatest net return at the farm for the product sold. On some occasions, the greatest net return is not the method that provides the highest price. A price of $2.00 a bushel for corn if delivered to the buyer in town, in comparison to $1.75 a bushel if sold at the farm, is not the best price if it costs more than $0.25 per bushel to load, transport, and unload the product when delivered in town at the higher price. A frequent comparison of the receipts per unit in comparison with the costs of marketing under different systems available will often help in planning a more efficient marketing system.

5. *Analysis of Variation in Physical Facts Important to Efficient Farm Management.* A cash record that includes the phys-

ical quantities for all products and items bought and sold, as well as the customary financial data, provides an excellent basis for computing such detailed physical facts, important in efficient farm management, as variation in crop yields from year to year and from field to field; changes in production rates of animals in comparison with feed costs and breeding programs; labor requirements, fertilizer uses, seeding rates, and the like, for certain farm operations; and variations in the size and productivity of the different enterprises. Estimates of crop yields in the field are of little value unless checked later with the actual amount sold. The amount of fertilizer expected to be used per acre may vary widely with the amount which actually was purchased and used as shown by the cash account. The best memory for the farmer is an actual record of what he did and exactly the amount he sold the last year instead of a guess, usually confused with results in other years, as to what he thought he did and what he thought he produced in earlier years.

A strictly financial cash record, including only the dollars-and-cents items, will not supply general physical information of the type needed. The farm cash account, however, which includes space for keeping the physical quantities as well as the cash record, will furnish many of these practical physical data. Although physical quantities are not so important for many types of business enterprises and frequently are omitted from records of financial transactions, the recording of physical quantities on farm records of all types should be considered of equal importance with the financial information and should be included in all records. This is one of the major reasons why farm records of all kinds ordinarily are organized in a different manner from other business records.

6. *Assembly of Facts for Preparation of a Simple Farm Budget.* The complete farm budget is a definite plan or blueprint for the operation of the farm business during some period of time, usually a year or crop season. To be most helpful, such a budget or plan of operations should be worked out in considerable detail and must be based on all the physical and financial resources available to the farmer. The foundation for a complete farm budget must be established in terms of the detailed physical inventory items,

the acres of various crops and the numbers of livestock, anticipated yields, expected prices, feed requirements, and estimated costs and returns from each individual enterprise. Such information can be obtained only from a rather complete record of past performance, the minimum being a detailed inventory record, a complete record of both cash and non-cash costs and returns for the year for the entire farm unit, and detailed cost and return data for the most important enterprises on the farm. A detailed discussion of farm budgets is presented in Chapter 9.

The farm cash account will not supply adequate information for such a complete detailed farm budget. Cash accounts, however, will supply certain information which is useful in preparing a more brief and simple plan of operations. This plan, called the simple farm budget of receipts and expenses, is a forecast of expected receipts and expenses, grouped by weeks or months, and prepared in a manner which will give a general picture of the time and quantity of the expected cash income and the time and amount of the various expense items.

The simple farm budget is prepared by listing, monthly, the cash expenses and cash receipts for the previous year as obtained from the farm cash account. For most efficient use, it is preferable that both the personal expenses and the farm expenses be included, but they should be listed separately. Then on a separate form should be jotted down the changes which appear likely in farm prices for the commodities produced and the shifts which are planned in acreages and livestock numbers on the farm, along with the differences which are expected in family living expenditures. Finally, based on what actually happened the previous year and on the estimates of differences between that year and the coming year, a list of expected receipts, expected farm expenses, and personal expenses for the year should be prepared. The result is the forecast of the income and expenses for the year and the cash income and outgo plan. If the total expenses for the year exceed the total receipts, the reliability of the estimates should be checked; if the estimates of changes still appear to hold true, the plan should be changed or else shifted to some other combination of enterprises before the plan becomes a reality. If the schedule of monthly expenses in comparison to re-

ceipts reveals that by the end of the year an excess of cash receipts over cash expenses is probable, but that in the first six months there will be more cash paid out than taken in, immediate plans should be made to obtain the necessary credit at the cheapest possible rate, to avoid last-minute credit arrangements at high costs.

Such a simple cash budget of expected receipts and expenses will serve a very useful purpose in providing a preview of what is likely to happen. With such a forecast, plans can be made to adjust the original outline of operations to the point where expenses can be held to the minimum and income increased to the maximum in accordance with the facilities on the farm. A simple farm budget of this type should not be considered a completely accurate plan. If very carefully prepared, the receipts or expenses may vary from 10 to 15 per cent from the forecast, depending on weather conditions and the accuracy of the price forecasts. Even with this expected amount of variation, the simple cash budget of expected receipts and expenses, when based on sound information derived from a previous record of cash costs and returns, will serve a valuable purpose in helping to prevent certain mistakes in the planning operation before they become costly. It will assist also in planning credit needs in advance in order to obtain credit at the time and in the proper amount to meet all needs at the lowest possible cost.

## EXERCISE 8

1. List and explain briefly the five important uses of the farm cash account.
2. Discuss the six important points of analysis used in the study of farm cash accounts as a basis of planning future farming operations.
3. Explain how to prepare a simple farm budget of expected receipts and expenses and point out how such a budget can be used.
4. Construct a series of simple farm budgets for Farm 9, using the cash receipt and expense record which follows, according to the following steps:
   - (a) Compute the total cash *farm* expenses and the cash *farm* receipts for each month.
   - (b) Summarize these monthly totals in a table showing the cash farm receipts, the cash farm expenses, the monthly difference,

and the cumulative difference, and compute the totals for the year.

(*c*) Assuming that the farm expenses and farm receipts will be about the same the following year, suggest methods of financing this business for the year, indicating where the money is to be obtained, when it should be paid back, how much will be needed, and from what credit agency it should be obtained.

(*d*) Compute the *total* cash expenses and the *total* cash receipts for each month, and summarize these in a table similar to the one prepared under (*b*).

(*e*) Assuming that the total cash expenses and the total cash receipts will be about the same the following year, suggest methods of financing the farm business and personal expenses for the year, indicating where the money is to be obtained, how much, when it is to be paid back, and from what credit agency or agencies.

(*f*) If you were operating this farm, which financial budget would you find most useful—the plan of expected farm expenses and farm receipts or total expenses and total receipts? Give reasons for your answer.

(*g*) Assuming that for the following year no oil lease income is expected and the poultry and egg prices are expected to increase 10 per cent and labor costs to increase 20 per cent, construct a financial budget of farm expenses and farm receipts as in (*b*).

(*h*) Assuming that for the following year, in addition to the assumptions in (*g*), the cost of groceries is to increase 20 per cent, construct a financial budget of total cash receipts and total cash expenses as in (*b*).

(*i*) In preparation of the different budgets, summarize the data in the following form:

| Month | Total Cash or Farm Receipts | Total Cash or Farm Expenses | Monthly Difference | Cumulative Difference |
|---|---|---|---|---|
| January | ________ | ________ | ________ | ________ |
| February | ________ | ________ | ________ | ________ |
| March | ________ | ________ | ________ | ________ |
| April | ________ | ________ | ________ | ________ |
| May | ________ | ________ | ________ | ________ |
| June | ________ | ________ | ________ | ________ |
| July | ________ | ________ | ________ | ________ |
| August | ________ | ________ | ________ | ________ |
| September | ________ | ________ | ________ | ________ |
| October | ________ | ________ | ________ | ________ |
| November | ________ | ________ | ________ | ________ |
| December | ________ | ________ | ________ | ________ |
| Total | ________ | ________ | ________ | ________ |

## TOTAL CASH RECEIPTS AND EXPENSES FOR ALL PURPOSES, FARM 9

### Cash Receipts

| | For What | Amount Received |
|---|---|---|
| January | 2 lb. butter | $ 1.00 |
| | 15 doz. eggs | 9.00 |
| | 26 hogs | 784.50 |
| February | 8½ lb. butter | 4.30 |
| | 37 doz. eggs | 18.20 |
| | 1 gal. buttermilk | .30 |
| | Poultry, 5 head | 4.00 |
| | 6 gal. lard | 14.40 |
| | 9½ lb. bacon and ham | 3.70 |
| | 5½ lb. sausage | 2.62 |
| | 4 gal. milk | 1.60 |
| March | 14 lb. butter | 7.00 |
| | 48 doz. eggs | 19.20 |
| | Poultry, 11 head | 8.40 |
| | 9 lb. bacon and ham | 4.50 |
| April | 14 lb. butter | 7.00 |
| | 44 doz. eggs | 14.80 |
| | 2½ gal. milk | .90 |
| | 54 bu. corn | 135.00 |
| | 20 lb. peanuts | 2.40 |
| | Discing for neighbor | 82.00 |
| May | 8 lb. butter | 4.00 |
| | 21 doz. eggs | 8.40 |
| | 1 gal. buttermilk | .40 |
| | Poultry, 5 head | 4.00 |
| | 6 gal. lard | 14.40 |
| | 29 lb. bacon and ham | 14.48 |
| | 182 bu. corn | 454.60 |
| | 20½ bu. peas | 91.30 |
| | Oil lease | 274.00 |

### Cash Expenses

| | For What | Amount Paid Out |
|---|---|---|
| January | Labor | $ 10.00 |
| | Fuel for tractor | 51.00 |
| | Gas and oil for auto | 42.20 |
| | Groceries | 25.20 |
| | Misc. household | 16.12 |
| February | Labor | 33.54 |
| | Groceries | 32.90 |
| | Misc. household | 23.68 |
| | 100 lb. Irish potatoes | 3.50 |
| | 100 lb. Irish potato seed | 9.90 |
| | Machinery repairs and hardware | 16.00 |
| | Taxes | 98.44 |
| March | Labor | 78.48 |
| | Groceries | 33.36 |
| | Misc. household | 19.00 |
| | Machinery repairs and hardware | 4.90 |
| | Feed | 7.70 |
| | Seed | 120.00 |
| | Freight on TVA phosphate | 16.70 |
| | Fertilizer | 230.40 |
| | Misc. personal | 4.00 |
| April | Labor | 55.86 |
| | Auto expense | 28.14 |
| | Groceries | 16.10 |
| | Misc. household | 3.00 |
| | Machinery repairs and hardware | 10.00 |
| | Feed | 3.00 |
| | Seed | 3.00 |
| | Misc. personal | 3.00 |
| May | Labor | 45.18 |
| | Tractor | 36.20 |
| | Auto | 31.80 |
| | Groceries | 40.44 |
| | Misc. household | 44.00 |
| | Machinery repairs and hardware | 54.50 |
| | Feed | 30.70 |
| | Seed | 38.70 |

CASH RECEIPTS

| | For What | Amount Received |
|---|---|---|
| June | 18 doz. eggs | 7.20 |
| | Poultry, 20 head | 17.40 |
| | 21 lb. bacon and ham | 10.50 |
| | 17½ bu. peas | 78.00 |
| July | Vegetables | 6.00 |
| | 9 lb. butter | 4.50 |
| | 8½ doz. eggs | 4.24 |
| | 3½ gal. buttermilk | 1.40 |
| | Poultry, 4 head | 2.50 |
| | 42 lb. bacon and ham | 8.30 |
| | 4 bu. peas | 19.00 |
| August | 6 lb. butter | 3.00 |
| | 11 doz. eggs | 5.50 |
| | Poultry, 17 head | 13.60 |
| | 5 gal. milk | 2.00 |
| September | 13 doz. eggs | 6.50 |
| | Poultry, 69 head | 55.20 |
| October | 16½ doz. eggs | 9.90 |
| | Poultry, 40 head | 32.00 |

CASH EXPENSES

| | For What | Amount Paid Out |
|---|---|---|
| June | Labor | 126.82 |
| | Tractor | 38.02 |
| | Auto | 24.00 |
| | Groceries | 12.00 |
| | Misc. household | 10.00 |
| | Machinery repairs and hardware | 20.80 |
| | Feed | 12.10 |
| | Seed | .50 |
| | Fertilizer | 19.90 |
| | Misc. personal | 10.00 |
| | Farm insurance | 7.00 |
| | Baby chicks | 20.00 |
| July | Labor | 47.50 |
| | Auto | 30.00 |
| | Groceries | 30.00 |
| | Misc. household | 21.80 |
| | Machinery repairs and hardware | 14.00 |
| | Feed | 28.70 |
| August | Labor | 12.70 |
| | Auto | 45.20 |
| | Groceries | 30.00 |
| | Bull calf purchased | 50.00 |
| | Misc. household | 31.00 |
| | Feed | 35.30 |
| September | Labor | 319.06 |
| | Auto | 36.48 |
| | Groceries | 30.00 |
| | Misc. household | 20.00 |
| | Machinery repairs and hardware | 19.20 |
| | Freight on TVA phosphate | 7.80 |
| | Farm insurance | 7.00 |
| | Baby chicks | 15.50 |
| October | Labor | 613.00 |
| | Auto | 30.00 |
| | Groceries | 30.00 |
| | Misc. household | 18.00 |
| | Machinery repairs and hardware | 168.50 |
| | Feed | 5.70 |
| | Seed | 149.60 |

## TOTAL CASH RECEIPTS AND EXPENSES FOR ALL PURPOSES, FARM 9 (*Continued*)

| Cash Receipts | | | Cash Expenses | | |
|---|---|---|---|---|---|
| | For What | Amount Received | | For What | Amount Paid Out |
| November | 10 doz. eggs | 6.00 | November | Labor | 98.10 |
| | 270 gal. syrup | 270.00 | | Tractor | 37.80 |
| | | | | Auto | 26.62 |
| | | | | Groceries | 20.00 |
| | | | | Misc. household | 40.00 |
| | | | | Machinery repairs and hardware | 148.88 |
| | | | | Paid on tractor account | 770.00 |
| | | | | Paid on farm mortgage | 2,000.00 |
| December | 7 lb. butter | 3.50 | December | Labor | 20.00 |
| | Poultry, 49 head | 71.50 | | Auto | 29.00 |
| | Summary of cotton sales: | | | Groceries | 40.00 |
| | Lint, 22,395 lb. | 3,738.14 | | Misc. household | 60.00 |
| | Cottonseed, 15 tons | 619.92 | | Feed | 3.20 |
| | 102 gal. syrup | 102.00 | | Misc. personal | 20.00 |
| | Total AAA conservation payment | 632.56 | | Summary of ginning costs | 387.92 |
| | | | | Paid cropper for labor | 372.66 |

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## CHAPTER 9

# The Combined Inventory and Cash Account Record

The two major farm records discussed previously include the farm inventory and the cash account. The inventory is a record of everything a farmer owns and everything he owes, at a given time, with the value for each item; it forms the basis for a credit statement. Two inventories, one at the beginning and one at the end of the farm year, tell whether the farmer is making financial progress and point out some of the weak spots in the financial structure of the farm business. An inventory, however, does not tell whether the farm as a business is profitable, since this list of all that a farmer owns and owes includes many personal and non-farm items; it is a statement of financial condition at a specific time, but it does not show what happened during the year.

The strict cash account is a record of all cash received and all cash paid out. It includes money spent for feed and fertilizer and that spent for groceries and pleasure trips; it includes income received from the sale of milk and income from non-farm sources such as oil leases and stock dividends. Sometimes the cash account is modified by farmers to include separate records of the cash receipts and the cash expenses of the farm business as a unit; sometimes the personal receipts and expenses are ignored completely in the interests of simplicity and brevity. This farm cash account provides the farmer with a simple summary of cash at any time and supplies sufficient information for a brief analysis of the farm business for planning future operations. The cash account, however, will not show the gain or loss on the farm as a whole because changes in inventory values are not considered.

It will not indicate any measure of gain or loss for the individual enterprises or for the season because the indirect expense items are not allocated and the cash record does not include adjustments for non-cash changes during the year.

The farm inventory may be compared to a snapshot—or a brief picture of the farm business—taken at a definite day and hour each year. This picture shows the situation at that time and indicates the net changes that have occurred on the entire farm unit since the last picture was made but does not point out how or why these changes occurred. The cash account may be compared to a moving picture of the small detailed actions that occur from day to day on the farm and finally cause the changes that are noted in the inventory snapshot at the end of the year. The summary picture (the inventory) alone or the detailed moving picture (the cash account) alone will not give the complete story of total changes in the farm business for the year. A combination of the two, however, will show the farmer his situation at the beginning of the year, the happenings during the year, and his position at the end of the year. With this combined information, the producer has at his command data on which to develop his farming plans for the following year and to study his farming activities from the viewpoint of improving efficiency. Also, he has much more information than would be available if either of the two records were kept and used without reference to the other. Each record is valuable for maintaining an efficient farm management program, but a combination of the two enhances the value beyond the sum of the values of the two component parts. The combined farm inventory and cash account is the simplest system of farm records that will provide every farmer with the basic information needed in the intelligent management of his farm business. Although there is much doubt as to the advisability of the majority of farmers adopting a double-entry bookkeeping system, there is little doubt that it will pay every farmer to keep the minimum amount of records needed, which is the combined farm inventory and cash account. Such a system will require about one-half day's work at the beginning of each year

and from one to two hours of work per week during the year. The earnings per hour for this work probably will exceed per-hour returns from any of the farm enterprises that are maintained during the year.

## Basic Information Supplied by This System

The following general groups of information can be obtained from a simple system of farm records including an annual farm inventory and a farm cash account for the year or crop season:

1. *Financial Statement Analysis with Reasons for the Indicated Changes.* The inventory at the beginning and the end of the year, combined with the cash account to indicate happenings during the year, not only will provide the needed data to determine the net worth at any particular time and the physical condition of the items composing the assets and liabilities but also will show how and why these changes took place.

2. *A Complete Credit Statement.* The complete credit statement needed in obtaining timely and cheap financing includes a detailed statement of financial condition which is provided by the farm inventory, and an operating statement, derived from the cash account, of expected receipts and expenses. Since credit is one of the essentials of modern agriculture, a complete credit statement is needed by most farmers to assist them in obtaining the amount and kind of financing needed, in using the money wisely, and in meeting payments without undue strain on the resources of the farm. The basic principle of credit is to buy where credit is sold and thereby obtain it on a reasonable and efficient basis. This can be done only when sufficient records are available to prove that the individual is a good credit risk.

3. *The Profit Earned from the Farm Business as a Whole.* As indicated previously, neither the farm inventory nor the cash account alone will provide sufficient data to compute any measure of return or profit on the farm business. The combined inventory and cash account, however, does supply sufficient data to compute the farm income, labor income, labor earnings, per cent return on capital, or any of the other common

measures of return, so that the profit or loss from the farm as a whole can be determined.

4. *An Indication of the Relative Net Returns from the Different Enterprises.* Although the combined inventory and cash account will not supply sufficient data to compute the absolute costs and returns for each of the different farm enterprises, it will provide facts so that a general evaluation of the efficiency of the different enterprises can be made each year. A breakdown of the cash receipts (from the cash account) and the non-cash receipts (from the inventory changes) for each of the important enterprises can be made, and a similar division of the cash expenses (from the cash account) and the non-cash expenses (computed from the farm inventory changes) can be determined. This kind of enterprise analysis, however, should be used with caution because of the general nature of the basic records.

5. *Basis for a Complete Farm Budget.* The combined farm inventory and cash account will provide sufficient information to serve as background material in preparing the detailed farm plan for the coming year. For such purposes, the records must include all the physical quantities and unit measurements as well as the financial accounts and must be supplemented with additional information about the cropping system, the outlook for the different enterprises, and similar data. A more complete system of records is desirable for this purpose, but the minimum needed for making a complete farm plan of operations includes the inventory and the cash account.

6. *Basis for a Complete Analysis of the Efficiency of the Farm Business as a Whole.* The combined inventory and cash account, together with the supplementary physical records kept in connection with these two records, provides a basis for a detailed analysis of the efficiency of the farm business as a whole. This analysis should serve as a means of determining the strong and weak points of the farm business and indicating ways of improving the weak points in order to obtain higher net earnings in the future.

7. *Complete Data for Income Tax Uses.* Although farmers are permitted to report their costs and returns on the cash basis

and thereby do not have to keep the more complete and detailed accrual records, the regulations under which income tax returns for farmers are filed require at least partial inventory data in addition to the cash expenses and receipts. As a result, the minimum records needed by any farmer to make a satisfactory federal income tax return include the cash account and the farm inventory.

## Kinds of Records in the System

Most states recognize the importance of the combined inventory record and cash account; this is shown by the major emphasis the various agricultural extension services have placed on the preparation and distribution of such a system of farm records and the training of farmers to keep and use the records. The exact or detailed make-up of the records, however, varies from state to state. In general, three different kinds or combinations of accounts are used in different parts of the United States, which provide the same final result—the combined inventory and cash account. The three kinds of accounts and the actual record books within the same type differ in the amount of detail suggested: supplementary information required, such as physical quantities, analysis factors, and records of credit transactions; provisions for summary; and suggestions for use. Record books including the basic inventory and cash accounts can be obtained from most of the land-grant colleges in the nation and from certain private agencies.

1. *The Two-book System.* Some states suggest and prepare for farmers a system of two different books to keep the records of financial condition and results of operation. This system includes a detailed farm inventory book in which are recorded all the inventory items, the summary and analysis of the inventory, and the credit statement. The second book in the system is a classified cash account. In it are recorded the daily cash expenses and receipts, supplementary non-cash transactions, a summary of the cash costs and returns, and provisions for analysis of the complete records after the inventory summary for the year has been transferred to this second book.

In this system the first book, or inventory record, usually includes space for recording the inventory for five consecutive years and requires a new cash account book for each year. The advantage of this system is economy in the distribution and use of the published books since many farmers will want to keep only the simpler inventory. With this system they can obtain and use this book without becoming confused by a more complicated, classified cash account; it is simpler since there is less confusion in recording financial-statement and operating-statement items, as they are in separate books, and it is cheaper because the inventory book needs to be replaced only once every five years. The disadvantages of this two-book system include the increasing difficulty of keeping up with two books instead of one and the occasional inconvenience of looking up certain items in two different books when inventory items are checked with receipts and expenses.

An outstanding example of this system is provided in the *Farm Inventory for Five Years*, a 25-page detailed farm inventory book, and the *Farm Cash Account Book*, a 37-page classified cash account record, published by the New York State College of Agriculture at Ithaca. These books are free upon request to residents of New York and are available for a small fee to residents of other states. Each of these books can be kept and used without reference to the other, or they can be combined to provide the more complete system.

2. *The Single-book System.* Many states and agencies publish and distribute to farmers an inventory account and cash account combined in one complete record book. Some of these record books provide for a classification or complete breakdown by enterprises, having the inventories, receipts, and expenses listed separately for each enterprise. For enterprise analysis, this grouping of inventory items and expense and receipt items has many advantages. However, for study of the complete farm as a unit, the fact that the inventory items and the receipt and expense items are scattered throughout the book may cause some inconvenience. Also, this sort of organization makes it more difficult to record the daily transactions in the proper places since many different pages must be located to list the receipts

and expenses. An outstanding record book of this kind is the *Illinois Farm Account Book,* a 49-page combined inventory and cash account book published by the College of Agriculture of the University of Illinois at Urbana.

Other kinds of records of the single-book system grouping include the complete inventory for the beginning and end of the year at the first or the last part of the book, then the complete record of cash expenses and receipts, and finally the summary and analysis sheets and the records of payables and receivables. This organization provides a simpler form for keeping the daily records and is compact for studying the results of operating the complete farm business as a unit, but it is awkward for studying the results from the different enterprises because of the necessity for rearranging the receipts, expenses, and inventory items by enterprises. An outstanding example of this is the *General Farm Account Book,* a 37-page combined cash account and inventory record published by the College of Agriculture of the University of Georgia at Athens.

All these single-book systems are characterized by certain basic advantages and disadvantages. These single records are compact and easier to use than the two separate books of the other system and are less likely to be lost. On the other hand, there is danger of confusing the operating statement or current cost and return items with the financial statement or inventory items in the single book. Over a long period of time the inventory records are less likely to be easily available for study.

3. *The Summary Record.* Many of the experiment stations of the colleges of agriculture in the different states conduct farm management studies in which large numbers of farmers in given areas are requested at the close of the year or crop season to report on their income, expenses, and inventory changes for the year. This information is collected in the form of a "farm business survey record," which is a summarized inventory at the beginning of the year, record of receipts and expenses during the year, and inventory at the end of the year, or a summarized inventory and cash account record.

The farm business survey record or schedule is not a true farm account in the usual sense of the word since it is a summary,

based mostly on the memory of the farmer, of his itemized receipts, expenses, and inventory changes. It is, however, a kind of combined inventory and cash account record which is used universally for research purposes and has other applications as well. For the farmer who has neglected to keep detailed records during the year, this schedule provides an ideal way of estimating his expenses, receipts, and inventory changes for income tax purposes or credit statements. It also serves as a useful summary of detailed records accumulated from the cash account and inventory records for use in analysis and farm planning. These summary records are available on request from the extension economist or the experiment station economist at most of the state colleges of agriculture. An example of a typical farm business survey schedule is reproduced on the following pages.

## EXERCISE 9

1. List the different types of basic information supplied by a combined farm inventory and cash account.
2. Discuss briefly the three different kinds of record systems which include the inventory and cash account.
3. Outline on four large sheets of paper a summary of a farm business record similar to the illustration included in this chapter.
4. Transfer the inventory and cash account records of Farm 10 to a combined inventory and cash account record book; summarize and complete the totals in the book; and transfer the totals to your outlined summary of a farm business record as prepared in 3. If a record book is not available, compute the totals and transfer them directly to the farm business summary.
5. Compute all totals on the farm business summary sheet, and transfer these totals to Table 14 of the farm business summary record at the end of this chapter and complete this table.

## FARM 10

### Cash Expenses

| Date | For What | Amount |
|---|---|---|
| January | | |
| 6 | 106 gal. gasoline for truck | $ 34.98 |
| 6 | 106 gal. gasoline for tractor | 34.98 |
| 6 | 55 qt. oil for truck and tractor | 20.00 |

| Date | For What | Amount |
|---|---|---|
| January | | |
| 10 | 60 ft. matched lumber | $ 5.56 |
| 10 | Auto license plates | 26.00 |
| 10 | Truck license plates | 57.60 |
| 19 | 248 cakes of ice | 12.40 |
| 20 | 1 shovel | 2.50 |
| 20 | 50 lb. hydrated lime | .70 |
| 22 | Land tax | 173.78 |
| 25 | 200 lb. 30% cow feed | 7.40 |
| 28 | Carbon job, plugs, gasket for car | 17.40 |
| 28 | Bolts and nails | 1.12 |
| 28 | 8 teat cups | 5.92 |
| February | | |
| 7 | 10 grain drill points | 4.50 |
| 11 | 3 applications for registry | 9.00 |
| 15 | 50 lb. calf starter | 3.50 |
| 15 | 100 lb. salt | 1.70 |
| 15 | 14½-ft. halter rope | .50 |
| 18 | 13 gal. gasoline for auto | 4.16 |
| 19 | Hired labor | 3.00 |
| 23 | 10-in. file | .60 |
| 25 | Lysol disinfectant | .50 |
| 26 | 300 lb. 30% cow feed | 11.10 |
| 26 | 6¼ gal. gasoline for auto | 2.00 |
| 26 | Interest on farm mortgage | 250.00 |
| March | | |
| 3 | Telephone bill | 3.00 |
| 4 | Disinfectant | .50 |
| 4 | 10 chain links | .20 |
| 7 | Fire insurance | 39.60 |
| 10 | 60 qt. oil for auto | 24.00 |
| 10 | 106 gal. gasoline for light plant | 33.92 |
| 10 | 106 gal. for tractor and truck | 33.92 |
| 10 | 60 lb. medium clover seed | 50.80 |
| 10 | 60 lb. Alsike clover seed | 42.34 |
| 10 | 60 lb. sweet clover seed | 16.46 |
| 10 | 300 lb. 30% cow feed | 11.40 |
| 10 | 100 lb. calf starter | 6.90 |
| 10 | 300 strainer pads | 3.00 |
| 12 | 6 electric bulbs for barn | 2.70 |
| 17 | 1 box louse powder | 2.00 |
| 24 | 600 lb. 30% cow feed | 22.20 |
| 25 | 3 horses shod | 7.20 |
| 30 | 100 machine bolts | 3.04 |
| 31 | Disinfectant | 1.20 |

### Summarized Cash Expenses for the Remainder of the Year

| Expenses | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|
| Cattle feed | $105.34 | $ 50.60 | $62.08 | $54.80 | $50.30 | $37.50 | $40.70 | $25.00 | $ 30.90 |
| Poultry feed | — | — | — | — | — | — | — | — | — |
| Other feed | 5.80 | 3.90 | 2.70 | 2.70 | 2.10 | .70 | — | — | — |
| Livestock bought | — | 20.00 | — | — | — | — | — | — | — |
| Auto expense | 10.00 | 37.84 | — | 8.00 | 8.00 | 17.96 | 6.00 | 9.00 | 12.00 |
| Truck and tractor | 6.76 | 97.84 | — | 26.98 | 51.96 | 35.98 | 14.00 | 13.00 | 7.20 |
| Dairy expense | 19.20 | 12.50 | — | 18.00 | — | 1.70 | 28.26 | 29.92 | 70.90 |
| Crop expense | 52.34 | 109.30 | 14.16 | 21.70 | — | 8.20 | — | 9.80 | 47.00 |
| Machinery | 5.00 | 4.00 | 21.56 | 14.50 | 32.20 | 3.00 | 6.30 | 5.40 | 79.58 |
| Buildings | — | — | — | — | — | — | 18.00 | 4.60 | — |
| Interest payments on debts | — | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 580.00 |
| Labor | 28.50 | 10.20 | 18.00 | 27.50 | 12.00 | 6.00 | 17.00 | 18.80 | 296.70 |
| Miscellaneous | 1.00 | 1.20 | 14.64 | 50.68 | 10.00 | 25.30 | 44.52 | 11.20 | 9.90 |

In addition to the direct cash expenses, board for one hired man was furnished by the operator for 9 months at an estimated cost of $30 per month. Also, one member of the family did 15 days of work on the farm at an estimated value of $2.00 per day; this work was not paid for in cash. The operator estimated that one-half of the total costs of the auto should be charged to the farm.

### Milk Sales

| Month | Pounds | Test | Gross Value |
|---|---|---|---|
| January | 2,183 | 4.00 | $100.02 |
| February | 2,233 | 4.05 | 94.88 |
| March | 6,863 | 3.70 | 236.86 |
| April | 10,940 | 3.50 | 306.32 |
| May | 12,783 | 3.25 | 294.20 |
| June | 12,469 | 3.30 | 266.82 |
| July | 11,233 | 3.20 | 236.94 |
| August | 9,647 | 3.35 | 219.98 |
| September | 8,607 | 3.35 | 298.58 |
| October | 7,285 | 3.35 | 261.56 |
| November | 5,525 | 3.40 | 218.52 |
| December | 4,200 | 3.50 | 169.68 |
| Total | 93,968 | — | — |

### Livestock Sold

| Date | Kind | Number | Amount Received |
|---|---|---|---|
| December 5 | Herd bull | 1 | $170.00 |
| 13 | Pigs | 2 | 27.00 |

### Crop Sales

| Date | Crop | Amount Received |
|---|---|---|
| March 7 | 60 bu. potatoes | $ 48.00 |
| 10 | 6,000 lb. oats and barley | 146.28 |
| April 23 | 400 lb. oats and barley | 10.00 |
| June 3 | 3 bu. potatoes | 2.40 |
| 7 | 50 bu. potatoes | 29.44 |
| 8 | 2 bu. potatoes | 1.00 |
| August 1 | 960 lb. oats and barley | 24.00 |
| 22 | 2 loads timothy hay | 20.00 |
| November 14 | 156 bu. potatoes | 120.46 |
| December 10 | 166 bu. potatoes | 200.00 |
| 15 | 166 bu. potatoes | 210.00 |
| 21 | 166 bu. potatoes | 200.00 |

### Miscellaneous Receipts

| Date | Items | Amount Received |
|---|---|---|
| February 10 | Feed grinding | $ 1.20 |
| March 26 | Feed grinding | 1.20 |
| April 20 | Snow removal—12 hours | 8.40 |
| June 24 | Gas tax refund | 24.56 |
| September 7 | Silo filling—W. M. W.—8 hours | 36.00 |
| 10 | Dividend check on feed bill | 10.32 |
| 13 | Silo filling—E. D.—5 hours | 13.00 |
| 17 | Silo filling—W. M. W.—9 hours | 40.00 |
| 25 | Silo filling—C. C.—20 hours | 90.00 |
| October 1 | Gas tax refund | 27.12 |
| 27 | 25 bags sold | 2.50 |
| December 26 | AAA payment | 298.50 |
| 31 | Gas tax refund | 50.48 |

### The Summary of Farm Inventories

| Inventories | Beginning of Year | Ending of Year |
|---|---|---|
| Land and buildings | $14,000.00 | $13,918.00 |
| Horses | 1,050.00 | 900.00 |
| Cattle | 2,725.00 | 3,860.00 |
| Machinery and equipment | 3,848.00 | 3,410.00 |
| Feeds and supplies | 1,559.00 | 2,556.02 |
| Total farm inventories | $23,170.00 | $24,644.02 |

Farm No.________ 

## SUMMARY OF A FARM BUSINESS RECORD

PREPARED BY COLLEGE OF AGRICULTURE, L. S. U.

Year Beginning________

Parish________ Ward or School________ Tenure________ Color________

### TABLE 1. DESCRIPTION OF FARM

| | | |
|---|---|---|
| Operator ________ | Acres owned ________ | Acres in crops ________ |
| P. O. Address ________ | Acres cash rented ________ | Tillable land lying out ________ |
| Landlord ________ | Acres share rented ________ | Open pasture tillable ________ |
| P. O. Address ________ | Total ________ | Open pasture not tillable ________ |
| Location ________ | Acres rented out ________ | Woods pastured ________ |
| Miles from market ____ Place ________ | Acres operated ________ ________ | Woods not pastured ________ |
| Soil types ________ | Topography ________ | Farmstead, waste, roads, etc. ________ |

### TABLE 2. CROP RECORDS FOR ENTIRE FARM[1]

| Crops grown | Acres | Yield per acre | Total harvested production | Sold or to be sold — Total: Amount | Price | Value | Family use: Amt. | Value | Purchased fertilizer: Amt. | Value | Purchased seed: Amt. | Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corn solid | | | bu | | | | | | | | | |
| Corn and (________) | | | bu | | | | | | | | | |
| ________ | | | bu | | | | | | | | | |
| Cotton lint | | | lbs | | | | | | | | | |
| Cottonseed | | | tons | | | | | | | | | |
| Soybeans solid | | | tons | | | | | | | | | |
| Oats for grain | | | bu | | | | | | | | | |
| Oats for hay | | | tons | | | | | | | | | |
| Cowpea hay | | | tons | | | | | | | | | |
| Peanuts | | | bu | | | | | | | | | |
| Sagrain | | | tons | | | | | | | | | |
| Rice | | | bu | | | | | | | | | |
| Cane for syrup | | | gal | | | | | | | | | |
| Cane for sugar | | | tons | | | | | | | | | |
| Native hay | | | tons | | | | | | | | | |
| Sweet potatoes | | | crts | | | | | | | | | |
| Irish Potatoes | | | cwt | | | | | | | | | |
| Strawberries | | | pts | | | | | | | | | |
| Pecans | | | lbs | | | | | | | | | |
| Other fruits | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Other truck | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Garden | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Total | | X | X | X | X | $ | X | $ | X | $ | X | $ |

[1]Include crops grown by owner and cropper. Circle (o) second crops and square ([]) interplanted crops.

### TABLE 3. COST OF CROPPER LABOR[2]

| Crop | Acres | Total production | Total value | Cropper's portion: Share | Value |
|---|---|---|---|---|---|
| | | | | % | |
| | | | | % | |
| | | | | % | |
| | | | | % | |
| Total | | x | | % x | $ |

Total value of cropper's share $________

Less cropper's part of farm expenses T. 9 $________

Cost of cropper labor $________

Estimated number of months of labor spent upon crops produced by cropper ________

[2]Enter the value of cropper's portion as sales in T. 2 and cost of cropper labor in T. 9.

### TABLE 4. LIVESTOCK RECORD[1]

| Kinds | Beginning farm year | | | Purchases | | Sold on foot | | | | End farm year | | | Died | Extra |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Price | Value | No. | Value | No. | Price | Wt. | Value | No. | Price | Value | No. | No. |
| Horses | | | | | | | | | | | | | | |
| Mules | | | | | | | | | | | | | | |
| Colts (——) | | | | | | | | | | | | | | |
| Milk cows | | | | | | | | | | | | | | |
| Heifers 1 yr. | | | | | | | | | | | | | | |
| Calves (——) | | | | | | | | | | | | | | |
| Bulls | | | | | | | | | | | | | | |
| Range cattle | | | | | | | | | | | | | | |
| Ewes | | | | | | | | | | | | | | |
| Lambs (——) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Boars | | | | | | | | | | | | | | |
| Brood sows | | | | | | | | | | | | | | |
| Other hogs | | | | | | | | | | | | | | |
| Pigs (——) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Chickens (——) | | | | | | | | | | | | | | |
| Turkeys | | | | | | | | | | | | | | |
| Ducks | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Total | X | X | | X | | X | X | X | | X | X | | X | X |

### TABLE 5. LIVESTOCK PRODUCTS[1]

| Items | Sales | | |
|---|---|---|---|
| | Amount | Price | Value |
| Milk —— gal | | | |
| Butter —— lbs | | | |
| Butterfat —— lbs | | | |
| Buttermilk —— qts | | | |
| Eggs —— doz | | | |
| Beef dressed —— lbs | | | |
| Pork dressed —— lbs | | | |
| Pork cured —— lbs | | | |
| Wool —— lbs | | | |
| Breeding fees | | | |
| Hides | | | |
| Honey —— gal | | | |
| Total | X | X | |

### TABLE 6. OTHER SOURCES OF INCOME[2]

| Items | Receipts | | |
|---|---|---|---|
| | Amount | Price | Value |
| Man labor (days) | | | |
| Man and team labor | | | |
| Machine work | | | |
| AAA payments | | | |
| Cash rent (acres) | | | |
| Syrup grinding | | | |
| Lumber, wood, etc. | | | |
| Machinery sold | | | |
| All other | | | |
| | | | |
| | | | |
| | | | |
| Total | X | X | |

[1] Include as sales all farm products kept for sale to tenants
[2] Only income from work related to agriculture should be included in Table 6.

### TABLE 7. SEED, FEED AND SUPPLIES

| Items | Beginning of year | | End of year | |
|---|---|---|---|---|
| | Amount | Value | Amount | Value |
| Hay | | | | |
| Silage | | | | |
| Fodder | | | | |
| Corn | | | | |
| Cottonseed | | | | |
| Cowpea seed | | | | |
| Velvet beans | | | | |
| Peanuts | | | | |
| Seed corn | | | | |
| Seed canes | | | | |
| Rice | | | | |
| Containers | | | | |
| Sweet potatoes | | | | |
| Soybeans | | | | |
| | | | | |
| Total | X | | X | |

### TABLE 8. VALUE OPERATOR'S FARM PRIVILEGES

| Product | Unit | Total units | Price | Value |
|---|---|---|---|---|
| Crops T. 2 | X | X | X | |
| Beef (fresh wt.) | lbs | | | |
| Pork (fresh wt.) | lbs | | | |
| Chickens | no. | | | |
| Eggs | doz | | | |
| Milk | gal | | | |
| Butter | lbs | | | |
| Honey | gal | | | |
| | | | | |
| Wood | cords | | | |
| House rent | X | X | X | |
| Total | X | X | X | |

**TABLE 9. CURRENT FARM EXPENSES**

| Item | Total farm | Cropper |
|---|---|---|
| Wage hands (___days) | | |
| Month help (___mo.) | | |
| Board | | |
| Cropper labor T 3 (___mo.) | | |
| Losses on croppers | | |
| Cotton chopping (___days) | | |
| Cotton picking (___days) | | |
| Cane harvesting (___days) | | |
| Repairs machinery T 10 | | |
| Repairs fences T 12 | | |
| Repairs buildings T 12 | | |
| Repairs drains & terraces | | |
| Feed: Roughage | | |
| Grain | | |
| Feed grinding | | |
| Salt | | |
| Seeds and plants T 2 | | |
| Fertilizer T 2 | | |
| Spray materials | | |
| Veterinary & medicines | | |
| Blacksmithing | | |
| Threshing | | |
| Twine | | |
| Baling wire | | |
| Ginning | | |
| Machine hire | | |
| Auto exp. (farm) T 11 | | |
| Truck expense T 11 | | |
| Tractor expense T 11 | | |
| Irrigation exp. T 11 | | |
| Other fuel and oil | | |
| Telephone (farm) | | |
| Bags, bbls, crates, etc. | | |
| Insurance (farm) | | |
| Taxes | | |
| Breeding fees | | |
| Registration fees | | |
| Electricity (farm) | | |
| Other | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Total | | |

**OTHER EXPENSES**

Cost of land rent A.___ Cost ___

Estimated value land rented $___

Value of operator's labor $___

Valu other unpaid family labor $___

Months of other unpaid family labor ___

**TABLE 10. MACHINERY AND EQUIPMENT**

| Item | Value beginning year | Purchased during year | End of year No. | End of year Value | Repairs |
|---|---|---|---|---|---|
| Wagon | | | | | |
| Buggy | | | | | |
| Carts | | | | | |
| | | | | | |
| Gasoline engines | | | | | |
| Diesel engines | | | | | |
| Electric motors | | | | | |
| Tractor plows | | | | | |
| Tractor discs | | | | | |
| Disc | | | | | |
| Walking plows | | | | | |
| Georgia stocks | | | | | |
| Harrow: spike | | | | | |
| Harrow: other | | | | | |
| Middle buster | | | | | |
| Lister | | | | | |
| Stalk cutters | | | | | |
| Roller | | | | | |
| Disc riding cult. | | | | | |
| Shovel ride cult. | | | | | |
| Walking cult. | | | | | |
| Cotton planter | | | | | |
| Hand dusters | | | | | |
| Machine dusters | | | | | |
| Graders | | | | | |
| Fert. distributor | | | | | |
| Corn planter | | | | | |
| Grain binder | | | | | |
| Thresher | | | | | |
| Grain drill | | | | | |
| Mower | | | | | |
| Hay rakes | | | | | |
| Hay baler | | | | | |
| Cane loader | | | | | |
| Cane hoists | | | | | |
| Chains, cane | | | | | |
| Potato grader | | | | | |
| Potato digger | | | | | |
| Work gears | | | | | |
| Saddles | | | | | |
| Feed grinders | | | | | |
| Grain cleaners | | | | | |
| Dairy equipment | | | | | |
| | | | | | |
| Hog equipment | | | | | |
| | | | | | |
| Poultry equipment | | | | | |
| | | | | | |
| | | | | | |
| Small tools | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total | | | | | |

### TABLE 11. POWER EQUIPMENT

| Item | Auto | Truck | Tractor | Irrigation | Other |
|---|---|---|---|---|---|
| Make | | | | | |
| Value beginning | | | | | |
| Bought new | | | | | |
| Sold or traded | | | | | |
| Value end | | | | | |
| Years use | mi | mi | days | days | days |
| Gasoline (gal) | | | | | |
| Fuel oil (gal) | | | | | |
| Oil (gal) | | | | | |
| Costs | | | | | |
| Gasoline | | | | | |
| Fuel oil | | | | | |
| Oil | | | | | |
| Repairs | | | | | |
| Insurance | | | | | |
| License | | | | | |
| Tires | | | | | |
| Others | | | | | |
| Total costs | | | | | |
| Farm share | % | % | % | % | % |
| Farm cost | | | | | |

### TABLE 12. REAL ESTATE AND IMPROVEMENTS OWNED

| Item | Value begin. of year | Improvements | Repairs during year | Value end of year |
|---|---|---|---|---|
| Dwellings (No.____) | | | | |
| Tenant houses (No.____) | | | | |
| Other buildings | | | | |
| | | | | |
| | | | | |
| Total buildings | | | | |
| Cleared land (A____) | | | | |
| Woods (A____) | | | | |
| Orchards (A____) | | | | |
| Fences | | | | |
| Drains or irrigation | | | | |
| Total land | | | | |
| Total real estate | | | | |

### TABLE 13. SUMMARY OF FARM CAPITAL

| Item | Total value | |
|---|---|---|
| | Beginning | End |
| Real estate T 12 | | |
| Livestock T 4 | | |
| Power machinery T 11 | | |
| Other machinery T 10 | | |
| Seeds, feeds, etc. T 7 | | |
| Total | | |

### TABLE 14. SUMMARY OF FARM BUSINESS

| | |
|---|---|
| 1. Average farm capital | |
| Farm receipts | |
| Crops T 2 | |
| Livestock sold T 4 | |
| Livestock products T 5 | |
| Other income T 6 | |
| Equipment sold T 11 | |
| Increase in capital T 13 | |
| 2. Total | |
| Farm expenses | |
| Livestock purchased T 4 | |
| Current T 9 | |
| Unpaid family labor T 9 | |
| Land rent T 9 | |
| Machinery purchased T 10 | |
| Power eqpt. purchased T 11 | |
| Real estate improvts. T 12 | |
| Decrease in capital T 13 | |
| 3. Total | |
| 4. Receipts less exp. L2 - 13 | |
| 5. Int. on capital L1 x % | |
| 6. Labor income L4 - L5 | |
| 7. Value family living T 8 | |
| 8. Labor earnings L6 + L7 | |
| 9. Return to capital | |
| L4 - value op.'s labor T9 | |
| 10. % return on capital L9 ÷ L1 | |

### NOTES

Age of operator____
Highest school attended____
Years a farmer____
Years on this farm____
No. in family on farm____
No. boys over 16____
No. tenant families____
Total No. in tenant families____
Kind farm records kept____
Operator's mortgage $____
Source____
Interest rate %____
Borrowed working capital $____
Source____
Interest rate %____
Enumerator____ Grade____
Checked by____ Date____

### FACTORS

| | |
|---|---|
| SIZE | PRODUCTION EFFICIENCY |
| Prod. man work units | Crop index for farm |
| Prod. horse work units | Prod. index for farm |
| Man equivalent | Pigs raised per sow |
| No. work stock | Milk per cow |
| Prod. animal units | CAPITAL EFFICIENCY |
| BALANCE | Farm. cap. turnover |
| % receipts from crops | % cap. in real estate |
| % M. W. U. on | % cap. in oper. cap. |
| % crop acres in legumes | OTHERS |
| % work units on crops | Farm price index |
| LABOR EFFICIENCY | |
| Man work units per man | |
| H. W. U. per work animal | |
| Acres of crops per man | |
| A. crops per work animal | |
| Labor cost per acre | |

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CHAPTER 10

# The Analysis of the Combined Inventory and Cash Account

The most important purpose of any complete system of farm records and accounts is to point out the strong and weak spots in the farm business so that the business operations in the future can be adjusted to result in higher net earnings to the producer. The combined farm inventory and cash account record has been stated to be the minimum group of records that will collect the necessary information for making the analysis and finding the important facts. It is also the simplest and most easily kept group of records to provide such data. In order to locate the strong and weak points of a farm business from these records, however, it is necessary first to summarize the records and compute certain farm business analysis factors. After certain farm business factors have been established from the records, it is possible to determine how the methods of organization, production, labor use, and marketing on any particular farm compare with the average of a group of farms in the same type-of-farming area or with standards of achievement established in other ways.

Many analysis factors may be useful in studying an individual farm or group of farms. In practical farm accounting, however, only a relatively small number of those available are applied to the records of any one farm. Some of the more important of these factors are discussed in this chapter. The student of farm accounting should become familiar with the major factors and their uses so that he will have knowledge of a tool which he can use under all conditions. For instance, it is not necessary to compute all the different measures of size of the farm business

in order to determine the relative size of a given farm; all that is needed is one or two measures adapted to the region and the kind of farm. In order to determine the relative size of the farm in any region or for any kind of farm, however, it is necessary to become familiar with all the different factors by which size is commonly measured.

Farm management studies made throughout the United States have indicated that the most important factors affecting returns from farming are the size of the farm business, the rates of production of the crops and livestock, the balance or diversity of the farm business, the efficiency attained in the use of labor, and the efficiency of utilization of workstock and power equipment. The more successful farms in most areas generally have: (*a*) a business unit as large as or larger than the average; (*b*) rates of production 10 per cent or more above the average for the area; (*c*) a business so balanced that labor, land, by-products, feed supplies, and manure may be used efficiently and fertility maintained economically; (*d*) a productive use of labor throughout most of the year; and (*e*) full use of well-adapted equipment and workstock to obtain low unit costs for these items. Other factors such as feeding efficiency, capital efficiency, and marketing methods are also important, although usually not so much so as the first five mentioned above. The proper adjustment of the type of farming to local conditions is also important, but better farmers seldom make serious mistakes in this problem of adaptation.

The major analysis factors for determining the relative standing of a farm in each of the important measures of success are as follows:

## Size of Business

1. *Acres in Farm.* This measure of size includes all the land in the farm, meaning the total cropland, woods, improved and unimproved pasture, swamps, streams, and land used for roads, fences, and building sites. The total number of acres in the farm, though one of the most common measures of size, is also one of the most undesirable. Its value is questionable because it does not consider the relative intensity of the enterprises on a farm. The size of a farm should be measured in terms of total acreage

only in a very uniform type-of-farming area and where there is little variation from farm to farm in the kind of soil, land cover, or relative intensity of the farm enterprises.

2. *Acres Used for Crops.* The total land area used for crops during the year is helpful as a simple measure of size provided that there is uniformity in the acreage and kinds of crops grown from farm to farm and that there are few or no livestock enterprises on the farms. If more than one crop is grown on any of the land during the year, the acreage should be counted only once in determining the acres used for crops.

3. *Total Crop Acres.* Sometimes the total acreage of all crops planted during the season reflects a more accurate picture of the size of the farm, since it includes double-cropping and thereby provides an adjustment for increased intensity. If double-cropping or interplanting is practiced, the total crop acres will exceed the acres used for crops. This is a fairly good measure of size if all farms in the area grow the same crops or the same proportion of different crops. It is of little value, however, for measuring differences in size between areas or between different kinds of farms in the same area.

4. *Acres of the Most Important Crop.* The magnitude of the size of the farm business in some type-of-farming areas can be shown adequately by the acreage in the most important cash crop produced on the farm. This is true in specialty one-crop areas but is limited to single-crop areas in which there are no livestock enterprises.

5. *Average Number of Important Livestock.* On specialty livestock farms in regions where there is little variation in the intensity of the major livestock enterprise, the average number of livestock maintained on the farm during the year is an adequate measure of the relative size of the farm business. This measure is useful for specialized dairy farms, poultry farms, and beef-cattle farms on which little or no feed is produced or other livestock or crop enterprises maintained. The average number for the year is determined from the inventory numbers at the beginning and end of the year. A more accurate method, when monthly inventory records are available, is a monthly average for the 12-month period.

6. *Average Number of Workstock.* In areas where little or no tractor power is used and the type of farming is relatively uniform, the average number of workstock is a fairly reliable measure of the size of the farm. Previous to the widespread adoption of tractor power in the southeastern part of the cotton belt, this was a good measure for evaluating the size of family cotton farms. At the present time, however, this measure of size is not sufficiently accurate for most farming regions of the United States because of the current trend toward the use of tractors. If and when tractor sizes and uses become standardized, the average number of workstock as a measure may be replaced by a factor based on the number and size of tractors on the farm.

7. *Man Equivalent.* The number of men or man-equivalents for the year on different farms provides a reasonably good measure of size in comparing farms in different regions, but for comparing farms in the same region it is inaccurate because of efficiency variations in the use of labor. The man-equivalent factor is important, however, because of its use in computing the most important factor for measuring labor efficiency. Man-equivalent is computed by establishing the total months that the operator and all other paid and unpaid laborers worked on the farm during the year and dividing this sum by 12 months to get the annual man-equivalent. In this computation, the work of woman and child labor should be converted to its equivalent in full-time man labor.

8. *Total Receipts.* Total dollar receipts as a measure of size is useful to some extent in comparing the same kind of farm in the same year. In different years or on farms producing several products in the same year, variations in prices affect the total receipts; also, changes in climatic conditions affect production rates and cause a distortion of the true size relationship.

9. *Total Animal Units.* An animal unit is a computed measure for purposes of comparison which represents an average mature horse or cow, or the equivalent in any other class of livestock, based on the average amount of feed consumed and manure produced. The total animal units for a farm are determined first by computing the average number of each class of animals from the beginning and ending inventories and then multiplying the number in each class by the proportion of an animal unit

represented by one individual in that group. The sum of the products for each group of livestock will represent the total animal units on the farm. The animal standards commonly used in most states are as tabulated.

| Animal | Unit |
|---|---|
| Cow | 1.00 |
| Heifer | 0.50 |
| Calf | 0.50 |
| Bull | 1.00 |
| Steer | 1.00 |
| Ox | 1.00 |
| Range cattle | 0.50 |
| Cattle fattened or wintered only | 0.50 |
| Horses | 1.00 |
| Mules | 1.00 |
| Colts | 0.50 |
| Breeding ewes, yearling sheep | 0.14 |
| Sheep or lambs fattened or wintered | 0.05 |
| Goats | 0.07 |
| Brood sows and boars | 0.20 |
| Pigs raised | 0.10 |
| All poultry | 0.01 |

10. *Productive Animal Units.* The productive animal units include the total animal units on the farm with the exception of work animals. It is a slightly better measure of size than total animal units because of the elimination of all animals not maintained on the farm for direct productive income. Both total animal units and productive animal units, in which all classes of livestock are reduced to a comparable unit, are useful as measures of size in mixed livestock areas but are of little value for crop areas or diversified regions including both crop and livestock enterprises.

11. *Productive Man Work Units.* One productive man work unit is the average amount of work accomplished by one man in the usual 10-hour farm day. The total productive man work units for a given farm represent the number of 10-hour days required, under average working conditions and abilities, to do all the work necessary in the direct production of crops, livestock, livestock products, and other productive endeavors. Time spent in caring for workstock, repairing machinery, or doing

other chores connected with the upkeep of the farm or equipment is not included in determining the productive man work units, since such labor is not directly productive work. Often the total of productive man work units on a farm is a more accurate and more representative measure of size then any of the other measures discussed. It measures the size of the job and the amount of work to be done on the farm, regardless of the system of farming or the intensity of the enterprises. Unfortunately, it is also the most difficult to compute. Total productive man work units are obtained by multiplying the acres of each crop, the number of each kind of productive livestock, and the other units of productive income by the average labor requirement per unit for each enterprise in the region. Since labor requirements of farm enterprises vary from county to county and state to state, no uniform set of units for each enterprise can be established that will be applicable for the nation as a whole or for any large agricultural region. Most of the states, however, have published average labor requirements for the enterprises common to their region. Local labor requirement averages should be used in the determination of total productive man work units when such data are available. The average man labor requirements for the more important farm enterprises in four different agricultural areas of the United States are as shown in Tables 1–4.

## Rates of Production

1. *Yield per Acre of the Most Important Crop.* Where any one crop represents a large percentage of the total farm receipts or occupies a large proportion of the total cropland, the relative production efficiency for a given farm unit may be expressed in terms of the yield per acre for this crop. Because of the wide variation which exists in kinds of soil, weather conditions, and farm practices from area to area, average yields in the immediate vicinity of the farm should be used for comparison purposes.

2. *Production per Unit of Livestock.* On specialized livestock farms, the important rates of production may be shown adequately by computing the number of eggs produced per hen, the pounds of milk produced per cow, the number of pigs raised

## TABLE 1. MAN WORK UNITS ON CROPS AND LIVESTOCK IN LOUISIANA *

| Crop | Man Work Units per Acre | Crop | Man Work Units per Acre |
|---|---|---|---|
| Cotton, upland | 12 | Vetch | 2 |
| Cotton, delta | 18 | Clover | 2 |
| Corn for grain | 4 | Lespedeza | 2.5 |
| Sugar cane for sugar | 21 | Winter peas | 2 |
| Sugar cane for syrup | 28 | Sudan grass | 1.5 |
| Rice | 3 | Alfalfa | 2 |
| Irish potatoes | 10 | Peanuts | 10 |
| Sweet potatoes | 9 | Watermelons | 10 |
| Native hay | 1 | Cantaloupes | 9 |
| Oats for hay | 1.5 | Tomatoes | 40 |
| Oats for grain | 2 | General garden | 30 |
| Cowpeas for hay | 4 | Misc. truck crops | 20 |
| Cowpeas turned under | 1.5 | Strawberries, single-row | 80 |
| Soybeans for hay | 5 | Strawberries, double-row | 130 |
| Soybeans turned under | 1.5 | Misc. orchard | 5 |
| Sorghum | 3 | Pecans | 2 |
| Crotalaria | 2 | | |

| Livestock | Man Work Units per Animal Unit |
|---|---|
| Dairy cows for farm use | 7 |
| Dairy cows, commercial dairy herds | 15 |
| Dairy cows, retail delivery | 24 |
| Heifers, calves, and bulls | 2 |
| Beef cattle | 3 |
| Sheep, breeding herd | 3 |
| Sheep for fattening | 2 |
| Goats | 2 |
| Hogs and pigs | 5 |
| Chickens | 25 |
| Turkeys, ducks, and geese | 15 |

| Miscellaneous | Man Work Units |
|---|---|
| Man labor, every day or $4 receipts | 1 |
| Man and team labor, every day or $8 receipts | 1 |
| Man and tractor labor, every day or $12 receipts | 1 |
| Syrup grinding, every day or $8 receipts | 1 |
| Grist mill, every day or $8 receipts | 1 |
| Lumber, wood, every day or $12 receipts | 1 |
| Bees, per hive | 0.1 |

* Data from Department of Agricultural Economics, College of Agriculture, Louisiana State University.

## TABLE 2. MAN WORK UNITS ON CROPS AND LIVESTOCK IN NEW YORK *

| Crop | Man Work Units per Acre |
|---|---|
| Corn for grain | 5 |
| Corn for seed | 9 |
| Corn for silage | 3.5 |
| Corn for fodder | 3.0 |
| Small grains cut and threshed | 1.5 |
| Small grains cut for hay | 1.5 |
| Hay per cutting | 1 |
| Hay for seed | 1 |
| Apples | 12 |
| Berries | 20 |
| Cherries | 25 |
| Grapes | 12 |
| Peaches | 6 |
| Pears | 7 |
| Fruit not of bearing age | 2 |
| Non-commercial orchard | 3 |
| Beans, field (dry) | 3 |
| Beans, snap—canning factory (not including picking) | 4 |
| Beans, snap—market | 30 |
| Beans, lima | 25 |
| Beets, table—bunched | 45 |
| Beets, table—topped | 25 |
| Cabbage, sold by ton | 9 |
| Cabbage, sold by crate | 12 |
| Carrots, bunched | 45 |
| Carrots, topped | 25 |
| Cauliflower | 35 |
| Celery, early | 45 |
| Celery, late | 30 |
| Corn, sweet—market | 8 |
| Corn, sweet—canning | 4 |
| Cucumbers, wholesaled | 10 |
| Lettuce | 30 |
| Melons | 10 |
| Onions | 40 |
| Peas—canning factory | 2 |
| Peas—market | 22 |
| Potatoes—table stock | 8 |
| Potatoes—certified | 10 |
| Spinach | 15 |
| Squash | 10 |
| Tomatoes—canning factory | 14 |
| Tobacco | 25 |
| Soybeans | 2 |

| Livestock | Man Work Units per Head |
|---|---|
| Dairy cows | 15 |
| Certified milk, add per cow | 15 |
| Retail milk, per 200 qt. | 1 |
| Heifers, calves, bulls, steers | 2 |
| Steers, or cattle fattened or wintered | 2 |
| Brood sows, pigs until weaned | 3 |
| Boars | 0.5 |
| Other hogs raised during the year | 0.5 |
| Colts raised | 4 |
| Stallion, not worked | 10 |
| Stallion fees, each | 0.5 |
| Hens and other mature poultry, per 100 birds | 20 |

* Data from Department of Agricultural Economics and Farm Management, New York State College of Agriculture.

| Livestock | Man Work Units per Head |
|---|---|
| Pullets raised (includes work on cockerels sold as broilers) per 100 birds | 5 |
| Baby chicks hatched (per 1,000) | 3 |
| Turkeys raised per 100 birds | 10 |
| Ewes and bucks (includes work on lambs) | 0.5 |
| Sheep and lambs fattened or wintered | 0.15 |

| Miscellaneous | Per Unit |
|---|---|
| Bees, per hive | 0.5 |
| Maple syrup, per 100 gal. | 19 |
| Lumber, per 1,000 ft. | 2 |
| Firewood, per 12-in. cord | 1 |
| Each day worked, or $4 receipts | 1 |
| Each day worked with team, or $6 receipts | 1 |
| Each day worked with machine, or $8 receipts | 1 |
| Each day worked with tractor, or $10 receipts | 1 |

## TABLE 3. WORK UNITS ON CROPS AND LIVESTOCK ENTERPRISES IN MINNESOTA *

| Item | Per | Number of Days of Productive Work |
|---|---|---|
| Dairy cows | Cow | 16.6 |
| Other dairy cattle | Animal unit † | 7.6 |
| Sheep | Animal unit † | 2.7 |
| Poultry | 100 hens | 20.1 |
| Hogs | 100 lb. produced | 0.55 |
| Turkeys | 100 lb. produced | 0.8 |
| Alfalfa | Acre | 1.5 |
| Tame and wild hay | Acre | 0.6 |
| Small grain and flax | Acre | 1.0 |
| Small grain hogged | Acre | 0.4 |
| Canning peas | Acre | 2.5 |
| Corn for grain (husked) | Acre | 2.1 |
| Corn for grain (husked and shredded) | Acre | 2.8 |
| Corn for silage | Acre | 2.6 |
| Corn hogged | Acre | 1.25 |
| Corn for fodder | Acre | 1.8 |
| Sweet corn | Acre | 3.0 |
| Potatoes | Acre | 6.4 |
| Sugar beets | Acre | 4.0 |

* Data from Minnesota Experiment Station Mimeo. Report 114.

† Animal unit represents 1 cow, 1 bull, 2 head of young cattle, 7 head of sheep, 14 lambs, 5 hogs, 10 pigs, 100 hens, or 1,400 lb. of turkeys produced.

TABLE 4. STANDARDS FOR CALCULATING THE NORMAL DAYS OF WORK REQUIRED FOR CROPS AND LIVESTOCK IN ILLINOIS *

| KIND OF CROP OR LIVESTOCK | DAYS OF WORK REQUIRED |
|---|---|
| Corn for grain or silage | 1.06 days per acre |
| Oats | 0.58 day per acre |
| Winter wheat | 0.82 day per acre |
| Spring wheat | 0.58 day per acre |
| Barley | 0.58 day per acre |
| Soybeans for grain | 0.47 day per acre |
| Alfalfa | 1.54 days per acre |
| Clover | 1.02 days per acre |
| Timothy | 0.97 day per acre |
| Soybeans for hay | 1.50 days per acre |
| Sweet corn | 1.06 days per acre |
| Canning peas | 1.20 days per acre |
| Cattle other than cows milked | 2.20 days per animal unit |
| Cows milked | 12.00 days per cow |
| Hogs | 0.245 day per 100 lb. produced |
| Sheep | 2.62 days per animal unit |
| Poultry | 19.40 days per 100 head |

* Data from Illinois Extension Service Mimeo. Report AE-1204.

per sow, and the like. In making these calculations, the total production of the respective class of livestock should be divided by the average number of animals for the year as computed from monthly inventory data.

3. *Crop Yield Index.* A crop yield index is a percentage comparison of the yields of all the crops on a particular farm as compared with the average yields of all farms in the nation, state, or the local area. On farms with two or more important crop enterprises and relatively little emphasis on livestock enterprises, the crop yield index is the best measure of production efficiency. The crop yield index of a farm should be limited to crops actually harvested, but the total planted acreage of such crops should be taken as the base. The average yields used in the computation should represent as closely as possible average yields in the local area. In computing the index, the relative yields of each crop included may be weighted according to the acres planted to each crop or the amount of work, based on productive man work units, devoted to each crop. A simple illus-

tration of the method of weighting the crop index by the number of acres in each crop is shown in the tabulation.

| Crop | Acreage and Total Production on the Farm: Acres | Acreage and Total Production on the Farm: Production | Average Yield in the Acre | Acreage Needed with Average Yields |
|---|---|---|---|---|
| Corn | 50 | 600 bu. | 10 bu. | 60 |
| Cotton | 40 | 12,500 lb. | 250 lb. | 50 |
| Hay | 10 | 12 tons | 1 ton | 12 |
| Total | 100 | — | — | 122 |

122 ÷ 100 = 122 per cent or a crop index of 122.

4. *Livestock Production Index.* The livestock production index is a percentage expression of the rates of production of two or more classes of livestock on a farm in comparison with the average rates of production of these same classes of livestock in the nation, state, or local area. On farms with two or more important livestock enterprises and no important crop enterprises, the livestock production index is the best measure of production efficiency. The simplest method of computing the livestock production index is to compute the simple percentage expression of the production rate for each class of livestock and then weight each simple index by the proportionate amount of productive man work units applied on the farm to each class or type of livestock. An example of this computation is shown.

| Livestock | Production Rate Compared to the Area Average | Proportion of Livestock P.M.W.U. on Each Type | Production Index |
|---|---|---|---|
| Dairy cattle | 120 | 50 | 60 |
| Hogs | 80 | 30 | 24 |
| Poultry | 100 | 20 | 20 |
| Total | — | — | 104 |

Combined production rate for all livestock is 104.

5. *Total Production Index.* The total production index of a farm is a percentage expression indicating the relative produc-

tion rates of all enterprises on the farm, including both crop and livestock, in comparison with production rates in the nation, state, or local area. It is the best measure of production efficiency on farms having diversified enterprises including both crops and livestock. It is computed by determining the crop yield index and the livestock production index and then weighting these two measures by the proportion of the productive man work units which are applied to each group of enterprises, as shown in the example.

| Enterprise Groups | Combined Production Index for Each | Percentage of Total P.M.W.U. for Each Group | Total Production Index |
|---|---|---|---|
| Crops | 122 | 40 | 48.8 |
| Livestock | 104 | 60 | 62.4 |
| Total | — | 100 | 111.2 |

Total production index is 111.2.

## Balance of Business

1. *Sources of Receipts.* A simple tabulation of the different sources of receipts will give some indication of the balance or diversity of the farm business. In making this approach to measure the relative balance of an individual farm business, the comparative receipts used should be those of the immediate area surrounding the farm. Also, the different receipt items should be organized into several broad groups, including field crops, vegetable crops, fruits and nuts, livestock, livestock products, and miscellaneous returns.

2. *Proportion of Cash Receipts from Different Sources.* In areas where one or two major enterprises make up most of the cash income, the percentage of the total receipts from these enterprises and from other sources is a satisfactory indicator of the relative balance of the farm business in comparison with others in the area. In some regions, where one crop or livestock enterprise is the dominant income-producer, the simpler ratio indicating the percentage of the total receipts from the major enterprise will be sufficient.

3. *Productive Man Work Units per Acre.* The total productive man work units divided by the acres in crops results in the average man work units per acre. This factor measures the relative intensity of the farming operations. In many areas, higher than average intensity in the operation of the farm indicates a more diversified and more efficient farm. This measure should be applied with caution, however, since in some cases the farming operations can become too highly intensified.

4. *Proportion of the Man Work Units Applied to Different Enterprises.* As an indicator of diversity or balance, the percentage of the total productive man work units which are applied to the different enterprises on the farm is a better measure of diversity than the relative receipts from the different sources, since receipts are influenced by prices as well as by size. On many farms, the percentage of the man work units on crops and on livestock is sufficient to indicate balance; where several important crop and/or livestock enterprises are common in the region, the actual proportion for each individual enterprise is needed.

5. *Feed Purchased per Animal Unit.* On specialized livestock farms, where a large part of the feed is purchased, an indication of the relative efficiency in the production of home-grown feeds is pointed out by the feed cost or the pounds of feed purchased per animal unit. This factor is of little value in comparing farms in different areas. A similar factor applying to crops can be derived by computing the fertilizer cost per crop acre or the pounds of fertilizer applied per acre. This measure, however, is sometimes an indicator of the efficiency in maintaining fertility without fertilizers, or it may be an indication of more efficient management in the application of liberal quantities of fertilizer. It should never be used without accompanying crop yields.

6. *Proportion of the Crop Acres in Legumes.* An indicator of the efficiency of the crop rotation and the balance between soil-depleting and soil-conserving crops can be determined by computing the percentage of the total crop acres in legumes. This measure is of some value in comparing nearby farms but is unsuitable for comparing farms in different regions since climatic factors and cropping systems vary widely from region to region.

## Labor Efficiency

1. *Acres of Crops per Man.* One of the simplest measures of labor efficiency is computed by dividing the total acres in crops by the man-equivalent. This measure, the acres of crops per man, is useful in evaluting relative labor efficiency in areas where there is little variation in the kinds of crops grown and no important livestock enterprises. In regions such as the wheat belt, parts of the cotton belt, specialty vegetable crop areas, and some intensive fruit sections, the acres of crops per man points out relative efficiency in the use of labor from farm to farm with an accuracy equal to any of the other measures, and it is much simpler to determine. For livestock regions and diversified farming areas, this measure is of little value. On specialty livestock farms, a similar measure is used by determining the number of cows per man, the hens per man, the hogs raised per man, and similar items.

2. *Productive Man Work Units per Man.* The best and most accurate general measure of labor efficiency is the productive man work units per man, which is computed by dividing the total productive man work units by the man-equivalent. With this measure, even farms in different type-of-farming areas, with different degrees of intensity or with varying amounts of crop acreages and livestock numbers, are comparable. A more complicated measure determined along the same lines is the output index, which retains all the advantages of the productive man work units per man measure and also takes account of variations in yields. The output index is computed by multiplying the total productive man work units per man by the total production index.

3. *Units of Production per Man.* On farms in specialized crop or livestock areas, the total units of the principal commodity produced divided by the man-equivalent supplies a satisfactory indication of labor efficiency. Such measures include the bushels of corn per man, the bales of cotton per man, the cans of milk per man per day, the cases of eggs per man, and similar items. Since these measures are based on volume of production, they

should be used with caution in measuring relative labor efficiency from one region to another or from one year to the next.

4. *Receipts per Day of Productive Work.* The cash receipts per day of productive work will measure man labor efficiency on farms where it is impossible to compute the man-equivalent. One objection to this measure is that it often includes some of the influence of varying prices secured by different farmers and therefore may indicate price efficiency rather than labor efficiency in some cases. It is computed by dividing the total farm receipts by the total productive man work units.

5. *Labor Cost per Acre.* The labor cost per acre represents the total cost of man labor per acre of crops grown; it is useful to measure labor efficiency in one-crop areas. It is computed by dividing the total value of all man labor, including hired labor, board furnished hired labor, unpaid family labor, cropper labor, and the total value of the operator's labor, by the total acres in crops.

6. *Productive Animal Units per Man.* On livestock farms, the productive animal units per man is useful in determining relative labor efficiency. Where any significant volume of crops is included in the farming system, this measure is an inaccurate indicator. It is computed by dividing the productive animal units by the man-equivalent.

## Efficiency in the Use of Equipment and Workstock

1. *Acres of Crops per Work Animal or Tractor.* The acreage of crops grown per work animal is a simple and reliable measure of workstock efficiency on farms which use no tractor power and in farming areas where there is little emphasis on livestock enterprises. On tractor-powered farms where no workstock is maintained, the acreage of crops per tractor is equally useful.

2. *Productive Work Units per Work Animal or Tractor.* In diversified-farming regions, the productive work units per work animal or per tractor is probably the best indicator of workstock or tractor efficiency. Like acres per unit, this measure is adapted best to farms which are operated either completely with workstock or completely with tractors. Where both are used, the measure may be misleading.

3. *Total Power Costs per Work Unit.* In areas where both workstock and tractors are used on farms, the total power costs per productive work unit is a satisfactory measure of efficiency in the use of workstock and tractors. This factor is computed by determining the cash costs of the tractors and workstock from the cash account and the depreciation costs from the inventory, and dividing these total costs by the productive man work units.

## Other Important Factors

1. *Price Index.* The price index is a measure of the relative efficiency of an individual farmer in obtaining good prices for his products. It is indirectly an indicator of marketing efficiency. A price index for an individual farm expresses on a percentage basis the prices received by this farmer as compared with prices received by all farmers in the area. If only one important product is sold, a comparison of the price of this one product with the average price for the region is as good a measure as is necessary. If there are several sources of receipts, a computed price index is needed. This is established by determining a percentage relationship for the price of each product sold in comparison with the average price for that product and then weighting each item by the proportion of the total productive man work units used on the enterprise. Another way of computing the index is to multiply the average prices for the region by the quantities sold by the individual, compute the total that would have been received had average prices been obtained for all products, and then divide this sum into the actual total sum received by the producer for all products sold.

2. *Farm Capital Turnover.* The farm capital turnover is the most common measure of capital efficiency. It is the ratio of the total farm receipts to the farm capital. It is computed by dividing the total farm receipts from all sources into the average farm capital. The farm capital turnover indicates the number of years required for the farm receipts to equal the average farm capital. The larger this figure, the less efficient is the utilization of capital. Other measures of capital efficiency include the proportion of the farm capital invested in real estate and the percentage of the total invested in operating capital.

## EXERCISE 10

1. Study carefully the information presented on the following pages summarizing results of combination inventory and cash account records of the year's business for Farms 11, 12, 13, 14, 15, and 16.
2. List the farms in order from largest to smallest according to the following factors:
   (*a*) Total acres operated
   (*b*) Acres used for crops
   (*c*) Acres in the most important cash crop
   (*d*) Man-equivalent
   (*e*) Total productive man work units
   (*f*) Average farm capital
3. Which of the above listed factors do you consider to be the best measure of the size of the farm business? Why?
4. List the farms in order from highest to lowest as to:
   (*a*) Percentage of cash receipts from cotton
   (*b*) Proportion of productive man work units on cotton
5. Which of the above two measures do you consider to be the best measure of diversification? Why?
6. List the farms in order from highest to lowest as to:
   (*a*) Yield per acre of cotton
   (*b*) Price of cotton per pound
7. List the farms in order from highest to lowest as to:
   (*a*) Farm capital turnover
   (*b*) Proportion of farm capital in real estate
8. Which of the two measures listed above do you consider to be the best measure of capital efficiency?
9. List the farms in order from highest to lowest as to:
   (*a*) Acres in crops per man
   (*b*) Productive man work units per man
10. Which of the two above listed measures do you consider to be the best measure of labor efficiency? Why?
11. List the farms in order from highest to lowest as to:
   (*a*) Cost of fertilizer per farm
   (*b*) Pounds of fertilizer per acre of cotton
   (*c*) Cost of hired labor
   (*d*) Current expenses
   (*e*) Total expenses
12. List the farms in order from highest to lowest as to:
   (*a*) Farm income
   (*b*) Labor income
   (*c*) Value of farm privileges
   (*d*) Labor earnings
   (*e*) Return to capital
   (*f*) Per cent return to capital

## FARM BUSINESS ANALYSIS OF SELECTED UPLAND COTTON FARMS

| Item | Farm 11 | Farm 12 | Farm 13 | Farm 14 | Farm 15 | Farm 16 |
|---|---|---|---|---|---|---|
| **Size of business:** | | | | | | |
| 1. Total acres operated per farm | 160 | 547 | 60 | 164 | 450 | 240 |
| 2. Acres used for crops | 30 | 146 | 39 | 34 | 270 | 64 |
| 3. Acres of cotton | 10 | 67 | 16 | 17 | 120 | 30 |
| 4. Number of workstock | 2 | 6 | 2 | 3 | 11 | 5 |
| 5. Man-equivalent | 1.0 | 5.6 | 1.9 | 2.2 | 8.7 | 3.5 |
| 6. Total productive man work units per farm | 178 | 1,072 | 259 | 298 | 2,237 | 549 |
| 7. Total farm receipts | $ 298 | $ 5,928 | $5,094 | $1,684 | $ 13,162 | $ 3,214 |
| 8. Average farm capital | $ 3,886 | $34,656 | $5,680 | $6,704 | $ 44,668 | $ 23,874 |
| **Balance and organization:** | | | | | | |
| 9. Sources of receipts | | | | | | |
| Cotton (includes cottonseed) | $ 206 | $ 3,326 | $ 792 | $1,060 | $ 8,328 | $ 2,520 |
| Crops (includes cotton) | $ 206 | $ 3,996 | $ 812 | $1,120 | $ 10,832 | $ 2,780 |
| Livestock sold | $ — | $ 414 | $ — | $ 14 | $ 350 | $ 250 |
| Livestock products | $ 12 | $ 606 | $ 16 | $ 18 | $ — | $ 84 |
| Increase in capital | $ — | $ — | $3,840 | $ 74 | $ 1,054 | $ — |
| All other (largely AAA payments) | $ 80 | $ 902 | $ 426 | $ 558 | $ 826 | $ 100 |
| Total | $ 298 | $ 5,928 | $5,194 | $1,684 | $ 13,162 | $ 3,214 |
| 10. Per cent of cash receipts from cotton | 69 | 56 | 63 | 66 | 69 | 78 |
| 11. Per cent of man work units on crops | 84 | 86 | 92 | 86 | 96 | 92 |
| **Production and price efficiency:** | | | | | | |
| 12. Yield per acre of cotton | 120 | 244 | 174 | 227 | 267 | 361 |
| Price of cotton per lb. | 16¢ | 17.5¢ | 18¢ | 16¢ | 16¢ | 17¢ |
| **Capital efficiency:** | | | | | | |
| 13. Farm capital turnover | 13.0 | 5.8 | 1.1 | 4.0 | 3.4 | 7.4 |
| 14. Per cent of capital in real estate | 59.2 | 85.7 | 79.4 | 80.7 | 83.0 | 82.5 |
| **Labor efficiency:** | | | | | | |
| Acres in crops per man | 30 | 26 | 21 | 15 | 31 | 18 |
| Productive man work units per man | 178 | 192 | 136 | 135 | 257 | 157 |
| **Expenses:** | | | | | | |
| Fertilizer | $ — | $ 330 | $ 132 | $ 102 | $ 1,358 | $ 592 |
| Labor (hired and cropper) | $ 16 | $ 1,326 | $ 260 | $ 558 | $ 5,408 | $ 1,502 |
| Pounds of fertilizer per acre of cotton | — | 100 | 253 | 235 | 200 | 203 |
| Current expenses | $ 234 | $ 2,272 | $ 756 | $ 940 | $ 9,754 | $ 2,574 |
| Unpaid family labor | $ — | $ 1,024 | $ 90 | $ — | $ — | $ — |
| Livestock purchased | $ — | $ — | $ — | $ 10 | $ 1,190 | $ — |
| Machinery purchased | $ — | $ 56 | $ 56 | $ — | $ 34 | $ — |
| Real estate improvements | $ — | $ — | $2,600 | $ — | $ 2,400 | $ — |
| Decrease in capital | $ 372 | $ 690 | $ — | $ — | $ — | $ 1,032 |
| Total | $ 606 | $ 4,042 | $3,502 | $ 950 | $ 13,378 | $ 3,606 |
| Farm income | $ −308 | $ 1,886 | $1,592 | $ 734 | $ −216 | $ −392 |
| Interest on average farm capital @ 5% | $ 194 | $ 1,732 | $ 284 | $ 336 | $ 2,234 | $ 1,194 |
| Labor income | $ −502 | $ 154 | $1,308 | $ 398 | $−2,450 | $−1,586 |
| Value of farm privileges | $ 438 | $ 1,306 | $1,052 | $ 568 | $ 1,240 | $ 874 |
| Labor earnings | $ −64 | $ 1,460 | $2,360 | $ 966 | $−1,210 | $ −712 |
| Farm income | $ −308 | $ 1,886 | $1,592 | $ 734 | $ −216 | $ −392 |
| Estimated value of operator's labor | $ 720 | $ 960 | $ 480 | $ 400 | $ 2,000 | $ 600 |
| Return to capital | $−1,028 | $ 926 | $1,112 | $ 334 | $−2,216 | $ −992 |
| Per cent return on capital | −26.45 | +2.67 | +19.58 | +4.98 | −4.96 | −4.16 |

13. Rank the five farms in order from the most to the least profitable, and point out the strong and weak points of each farm which very likely determined how it ranked as to relative returns.

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CHAPTER 11

# The Complete Farm Budget Based on Inventory and Cash Account Records

One of the important uses of a complete but simple system of farm records including inventory and cash account records is the application of the facts obtained and lessons learned from the results of one year's operation to the plans for the following year. Every farmer has a plan of operations; he may have only a vague idea of what he expects to plant and how he hopes to pay his debts, but it is a plan, nevertheless. The farmer who operates on a businesslike basis usually has a much more definite plan. The amount of detail and completeness of a farm plan, or farm budget, is dependent on the type of past records on which the budget is based; the effectiveness in using the budget depends on the current records being kept.

Farm inventory and cash account records will provide much of the basic information essential to a simple but complete budget. The remainder of important data needed can be obtained from local sources and from the good judgment dictated by farm experience in the area. A well-developed farm plan, or budget, combined with complete farm records and used with good judgment, will aid the farmer in adjusting his farm business more accurately and rapidly to meet changing economic conditions, and it will assist in the more efficient management of the individual farm enterprises. Any plan or budget, no matter how carefully developed and how accurate, cannot be followed to the letter. Conditions change too rapidly in agriculture. A farm budget or plan, making use of the best information obtainable, and individual good judgment, based on the land, labor equipment, and capital available, will help to prevent many mis-

takes before they occur and will aid in bringing about the maximum income possible with the given resources of the farm. A farm plan may have to be changed to meet changing conditions, but it is better business to change a well-developed plan based on past results and current uncertainties than to meet emergencies with no plan.

## Steps in the Development of the Complete Farm Budget

1. *Inventory of Resources.* The first step in the development of any plan of future operations is to take inventory of all the available resources. On the farm, this means a complete farm inventory and a summary of other facts revealing the present state and condition of all items important to the operation of the farm. The farm inventory will supply needed data such as the acreage of woods, pasture, cropland, and orchards, the number and condition of the buildings and fences, the amount of livestock and equipment on hand, and the financial status of the operator. In addition, a brief summary should be made of the physical condition of the different fields; this report should include the relative fertility, degree of erosion, drainage needed, and adaptability to different crops. Finally, the inventory or summary of personal resources should be listed, including the age of the operator, the size of the family, the number of unpaid family workers who will be available for farm work each month of the year, and other personal factors important to the situation. Much of this information is available from the completed inventory of both farm and non-farm assets. The remainder can be assembled with careful attention to detail and the realization that the success of the plan will depend to a large extent on an understanding of the actual situation at the start of the year.

2. *Analysis of Present Farm Organization.* The next step in the development of the plan is the analysis of the present status of the farm organization as developed from the combined farm inventory and cash accounts, or other records including crop and livestock histories and physical quantities. This should include a study and review of the organization of the farm as a unit, the combination of enterprises followed in the last several years, crop yields and animal production rates obtained, relative effi-

ciency in the use of labor, machinery, and capital during the last few years and especially during the most recent complete farm year, and other similar factors. The detailed steps in the analysis of the present farm organization have been covered previously; records of past performance are essential for this step, and the more detailed the better, but the information supplied from the inventory and cash account will be sufficient for the analysis of the complete farm as a unit.

3. *Statement of Major Problems and Adjustments Needed.* With the resources available for use and the results of past performance in view, the next step is to list the major problems which are indicated to exist and point out the adjustments needed for solving or diminishing these problems. This procedure involves not only a summary of the strong and weak points of the farm business but also an indication of the changes needed to improve the weak or less desirable phases of the farm business. This part of the planning process should be prepared very carefully on a detailed, specific basis. A record of a dairy farm, for instance, might indicate that the farm business is too small to supply full-time work for the operator and members of his family. The adjustment needed would be to add 5 more dairy cows to furnish additional productive work, to utilize fully the available pasture, and to increase the cash income. On a cotton farm, the inventory may show heavily eroded and depleted soils from which the record of performance for the year reveals low cotton yields. In this case, it might be well to make an adjustment by reducing the cotton fields 5 acres and the corn area 10 acres and by increasing tomato acreage 2 to 4 acres on the level, fertile creek-bottom to offset the decreased income from the reduced cotton acreage. Each and every farm has a specific set of individual problems with different adjustments needed. The individual farmer, with his knowledge of the particular farm and its productivity and with adequate records, is in a better position than anyone else to decide on the type and degree of the needed adjustments and to make the necessary plans for bringing about these changes.

4. *Planning the Cropping System.* Once the resources are outlined, the weak points located, and the major adjustments decided upon, the first definite step in the planning system fol-

lows. The logical approach on most farms is to outline the cropping system in detail since the area planted to the different crops will determine to some extent the size of the livestock enterprise and the cash income to be received from crop sales.

The cropping system for most farms can be outlined as follows: First, the different fields available for crops as determined from the inventory and the long-time cropping system on the farm should be listed, and the total area available for all crops determined. Second, the total acreage and kind of feed crops to be grown, based on past experience of relative costs and returns, with indicated adjustments, should be decided upon and the exact fields in which each feed crop is to be produced should be indicated. In this planning, there should be considered long-time rotations, soil conservation measures, and other items such as locating crops like corn for silage in fields where the job of hauling to the silo will be at a minimum. Third, decisions should be made on the total area of the different cash crops to be produced, the fields in which these crops are to be grown, and the use to be made of these crops and any by-products. After this step is completed, some adjustments may have to be made in feed crops and cash crops to plan complete utilization of all land resources. Fourth, the expected yield per acre and total production for each crop based on results from records of previous years and experience in the area should be determined. Fifth, the estimated cash receipts from all crops to be sold, based on the expected yields, past results, and the price outlook, should be computed. Finally, the estimated direct cash expenses should be established for each crop, based on records of previous years and the outlook as to changes in prices of fertilizer, seed, labor, and other cost items.

Some efficient farm management principles that are useful in planning the cropping system include: (*a*) building the crop rotation around the most profitable crops, (*b*) including enough soil-building crops to maintain productivity and control erosion, (*c*) using a different rotation, if possible, for each class or grade or crop, (*d*) having as many fields as there are years in the crop rotation, (*e*) arranging fields to be as nearly equal as possible in size, (*f*) laying out the fields for ease of cultivation and convenience in the use of equipment and power available, (*g*)

## TABLE 1. THE CROPPING SYSTEM

| Crops | Last Year's Results | | | | | This Year's Plan | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Acres | Yield per Acre | Total Production | Amount Used on Farm | Amount Sold | Acres | Yield per Acre | Total Production | Amount Used on Farm | Amount Sold |
| Cash crops | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Feed crops | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Pasture | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Total | | | | | | | | | | |

working the fields to control erosion, including contour plowing if needed, (*h*) avoiding the mixing of pasture crops and cultivated crops in the same fields, (*i*) keeping a large percentage of the land in some crop throughout the year, and (*j*) planning the cropping system to provide for a large part of the home food supply. A suggested outline for summarizing the crop plan is presented in Table 1.

5. *Planning the Livestock System.* The livestock plan should immediately follow the cropping system plan. A practical approach to a workable livestock plan can be made along the following lines: (*a*) Determine the numbers of each of the different types and kinds of livestock from the inventory and make any indicated adjustments in livestock numbers. (*b*) Check the cropping system plan for the amount and types of home-grown feed which will be available. (*c*) Check the cash on hand and credit to be available for the purchase of necessary feed and livestock replacements. (*d*) Estimate the total feeds to be needed and check the kinds and amounts of each against the available home-produced feed. If there is an undersupply or an oversupply indicated, adjustments should be made at this point. These adjustments may take the form of increasing or decreasing the cropping plan for home-produced feed, of increasing or decreasing the numbers of different livestock to be maintained, or of changing the planned feed purchases. (*e*) Determine the expected production rates and weight increases to be obtained under the planned feeding conditions and the indicated amount and kind of pasture available. (*f*) Compute the expected cash receipts from each livestock enterprise, based on results in former years and on the price outlook for the different livestock and livestock products. (*g*) Estimate the direct expenses for each enterprise, based on the records of past results and the outlook for prices of feed and other items needed in the production plan.

Some important farm management principles to observe in developing the livestock plan include (*a*) the selection of the classes of livestock and the intensity of use which fits in best with the cropping system, any crop by-products, and the pasture land available; (*b*) determination of the numbers and classes of livestock according to the amount of feed to be available, avoiding dependence on large amounts of purchased feed except

## TABLE 2. THE LIVESTOCK SYSTEM

| Kind of Livestock | Last Year's Results | | | | | | This Year's Plan | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Animals | Feed Required | | | | Total Production | No. of Animals | Feed Required | | | | Total Production |
| | | Grain | Hay | Pasture | Other | | | Grain | Hay | Pasture | Other | |
| Dairy cows | | | | | | | | | | | | |
| Heifers | | | | | | | | | | | | |
| Calves | | | | | | | | | | | | |
| Bulls | | | | | | | | | | | | |
| Beef cows | | | | | | | | | | | | |
| Feeders | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Hogs | | | | | | | | | | | | |
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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
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| Sheep | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Poultry | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Other | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Total | X | | | | | | X | | | | | |
| Feed produced | X | | | | | X | X | | | | | X |
| Feed purchased | X | | | | | X | X | | | | | X |

in feeder operations or other unusual practices; and (*c*) planning the livestock system to provide a large part of the farm family demands for meat, eggs, and milk. A suggested outline for summarizing the livestock plan is presented in Table 2.

6. *Adjusting the Crop and Livestock Systems.* Once the crop and livestock plans are developed, these should be checked at all points where the two are interrelated before continuing with the over-all farm plan. The numbers of livestock should be weighed against the feed to be produced, and the acreage of pasture should be compared with the pasture needs of the different groups. Also, the labor requirements of both the crop and livestock enterprises should be outlined and compared to be sure that peak labor demands beyond the existing supply of labor do not occur for several enterprises at the same time. If conflicting labor demands are serious enough, it is better to change the cropping and/or livestock plan before the season begins rather than to wait until it is too late to change without sacrificing profits from one or more enterprises.

At this point in the planning program, a careful check may save many large losses in future operations. Certain feed crops are to be produced; certain livestock enterprises are to be maintained with this feed. Although this system may have been most profitable in past years, changing feed and livestock prices might be such that it will be more profitable to sell the feed crop and drop the livestock enterprise or substitute it with another. Also, the carefully assembled direct cash expenses and estimated receipts for each enterprise may show that because of changes in prices or costs, the expected direct expenses are almost as large or even larger than the expected receipts. Since the direct cash expenses are only part of the total costs of operating the farm, any enterprise which does not show promise of more than paying these costs certainly will not show a profit at the end of the year. The time to drop such an enterprise from the farming system or to adjust it to meet changing conditions is at the beginning of the year rather than after the loss has occurred. One of the most important values of the complete farm budget is the pointing out of these and similar facts.

7. *Planning the Amounts, Use, and Distribution of the Indirect Receipt and Expense Items.* On any farm there are many

## TABLE 3. EXPENSES AND RECEIPTS

| Receipts | Last Year's Results | | | This Year's Plan | | |
|---|---|---|---|---|---|---|
| | Amount | Price | Value | Amount | Price | Value |
| Crops | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Livestock | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Other | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Total | X | X | | X | X | |

TABLE 3. EXPENSES AND RECEIPTS (*Continued*)

| Expenses | Last Year's Results | | | This Year's Plan | | |
|---|---|---|---|---|---|---|
| | Amount | Price | Value | Amount | Price | Value |
| Feed purchased | | | | | | |
| Livestock purchased | | | | | | |
| Other livestock costs | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Seed | | | | | | |
| Fertilizer | | | | | | |
| Repairs | | | | | | |
| Taxes | | | | | | |
| Miscellaneous | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Total | X | X | | X | X | |
| Gross cash income less expenses | X | X | | X | X | |

farm expenses which cannot be allocated directly to any individual enterprise without detailed and comprehensive cost-accounting records beyond the abilities and desires of most farmers. Some of these expenses include the gas and oil for the tractor, the workstock costs, taxes and insurance, repairs to the buildings, fencing, and other similar items. In many instances, there are also indirect receipt items, such as soil conservation payments, which are difficult to allocate. In developing a simple but complete farm plan, the amounts to be expected, the use of these items, and the distribution throughout the year must be established in order to perfect the expected costs-and-returns picture or plan for the year. Estimates for these indirect items should be based on costs and returns for the same items in previous years and any expected changes during the coming year. The most important expense items of this kind include (*a*) land costs, such as drainage, terracing, fencing, clearing, taxes, interest, and any purchases or sales planned to make needed adjustments; (*b*) building costs, including depreciation, insurance, taxes, repairs, interest, and any improvements and additions planned; (*c*) machinery and equipment costs, such as purchases or sales of equipment, gasoline and oil costs, depreciation, interest, repairs, and costs of hired machinery; (*d*) workstock costs, including feed to be used, purchases for replacements, and veterinary costs; and (*e*) other indirect items such as the telephone, electricity, water system, fire insurance, and interest. The most important indirect receipt items are soil conservation payments, receipts from miscellaneous work off the farm, equipment, workstock, land rented, and jury duty. A suggested outline for use in summarizing the current expenses and receipts is presented in Table 3.

8. *Summary of the Plan for the Year.* With the crop plan, the livestock plan, and the indirect expense and receipt plan, a final financial summary of the budget can be made. This should be done by summarizing first all cash receipts by months, classifying them by enterprises and other sources. Second, the cash expenses by months should be summarized, with all direct expenses grouped according to enterprises and all indirect expenses according to subject matter. Then by using an estimate of the expected inventories at the end of the year, based on the crop

## TABLE 4. THE SUMMARY

| | Last Year's Results | | This Year's Plan | |
|---|---|---|---|---|
| | Amount | Value | Amount | Value |
| A. Capital investment:<br>Cropland | | | | |
| Improved pasture | | | | |
| Woods | | | | |
| Orchards | | | | |
| Other land | | | | |
| Dwellings | | | | |
| Other buildings | | | | |
| Fences and drains | | | | |
| Wells | | | | |
| Total Real Estate | | | | |
| | | | | |
| Livestock | | | | |
| Power machinery | | | | |
| Other equipment | | | | |
| Seed and feed | | | | |
| Miscellaneous | | | | |
| Total Farm Capital | | | | |
| | | | | |
| B. Receipts:<br>Crops | | | | |
| Livestock | | | | |
| Livestock products | | | | |

| | Last Year's Results | | This Year's Plan | |
|---|---|---|---|---|
| | Amount | Value | Amount | Value |
| Equipment sold | | | | |
| Increase in farm capital | | | | |
| Other income | | | | |
| | | | | |
| Total Receipts | | | | |
| | | | | |
| C. Expenses: Current cash costs | | | | |
| Livestock purchased | | | | |
| Machinery purchased | | | | |
| Land rent | | | | |
| Real estate improvements | | | | |
| Unpaid family labor | | | | |
| Decrease in farm capital | | | | |
| | | | | |
| Total Expenses | | | | |
| | | | | |
| Receipts less expenses | | | | |
| Interest on capital | | | | |
| Labor income | | | | |
| Value of family living | | | | |
| Labor earnings | | | | |

and livestock plan, any of the common measures of farm profit can be computed, including the expected labor income, labor earnings, or return to capital. Other physical summaries also should be made, such as the labor to be required compared with its availability by months, and feed needs and supplies. A suggested outline for preparing the final summary is presented in Table 4.

## The Use of the Complete Farm Budget

There are three major points of application in the use of the complete farm budget after it has been prepared. Certain important values are obtained by an immediate analysis of the plan of operations before the beginning of the season: Other applications can be obtained during the year's farming operations, and other uses can be made at the end of the year's business.

1. *Analysis of the Plan before the Beginning of the Season.* An immediate study of the completed budget or plan for the coming year will assist in making many major and minor adjustments to bring about the highest possible net farm income. A brief analysis of the scope, expenses, and receipts of the leading farm enterprises will aid in modifying the plan to eliminate all enterprises which are indicated to be unprofitable or to replace or modify these enterprises in order to lower total costs and increase total returns. A study of the direct and indirect expenses will show many items that, if thought out in advance, could be avoided or reduced without decreasing the net income. A review of the cash on hand, as shown by the inventory and the expected receipts and expenses from the budget, will provide the best possible basis for determining definite credit needs so that arrangements can be made in advance and at the most reasonable rate to obtain the kind and amount of credit needed. A careful comparison of the crop and livestock enterprises may indicate means by which the pattern of production can be changed to earn the maximum soil conservation payments possible without sacrificing cash income. Finally, a comparison of the plans for personal spending during the year with the expected receipts and expenses may show how to adjust this spend-

ing so that expensive credit accounts may be avoided and the important expenditures made at the time when cash is available.

2. *Use of the Budget During the Year's Operation.* Many individuals have a very misleading idea of the purpose of a budget in operating a business. Because a business operating on a budget provides the managers with an excellent excuse for refusing to purchase items they feel it is not wise to purchase or to make changes that appear undesirable, the frequent answer given to a request of this sort is, "We cannot do it because it is not in the budget."

As a result, many individuals think that a budget is a rigid plan with a fixed rule for every operation, unchangeable under any condition. This opinion is held by so many farmers that in working with farm groups in the preparation and use of farm budgets, extension workers have found that if the word "budget" is omitted entirely in all discussions and the work and explanations centered around "farm planning," a much more favorable response is obtained. Regardless of whether this farm tool is termed a "budget" or a "farm plan," it should be used as a guide or yardstick during the year's operations and not as a fixed rule for every operation.

The usual farm budget should be a generous estimate of expenses and a conservative estimate of receipts so that there is assurance of a sound plan. If the developing results of the business during the year indicate that the plan is unsound, major adjustments of the budget may be needed. When unusual conditions occur, the farmer should feel free to change the current operations to meet these new problems and to adjust the budget to meet these conditions. During the year, the plan may be employed expediently in comparing the budget with current records at frequent intervals to see that the outlined plans are progressing satisfactorily and that certain items of expense are not moving out of line with the expected income. In ordinary years, barring rapidly increasing or decreasing farm prices and/or abnormal weather conditions, the plan of operations should not vary more than 10 to 15 per cent from the actual results.

3. *Use of the Budget at the End of the Year's Operations.* After the season is completed and the ending inventory made,

the actual results shown by the completed cash account and inventory records when compared with the budget for the year will serve as a basis for comparison to determine why the plans and actual results did not coincide. This comparison of estimated with actual results of the individual enterprises and the complete farm unit will aid in making the system of records a much more useful tool in determining the strong and weak points of the farm business and in planning ways to improve efficiency and increase earnings. Also, the relation of the budget to the records will serve as a basis for adjusting the system of records to make it fit more adequately the changing needs for the following years, and will provide information for making a more complete and accurate budget for the next year.

In the preparation of a complete farm budget, no special forms or unusual accounting systems are needed. The inventory records of the beginning and end of the previous year's operations and the cash accounts of expenses and receipts should be the basis of the planning. These records, combined with good judgment and the organized steps in developing the budget discussed heretofore, should complete the picture of needed materials. If a detailed guide is desired, some of the state colleges of agriculture publish examples, blank forms, and basic data on which to formulate the plan. Two excellent examples of these, entitled *Planning the Farm Business,* are published and distributed by the College of Agriculture of the University of Illinois at Urbana, and the College of Agriculture of the University of Missouri at Columbia. These publications are usually available for a small fee. In addition to such records, certain guides are needed in estimating future prices and costs. *The Agricultural Situation,* published monthly by the United States Department of Agriculture and available at no cost to all residents in the United States, and the various outlook and economic reports published by the different state colleges are excellent sources of outlook information.

## EXERCISE 11

1. Explain briefly the eight different steps in the development of the complete farm budget.
2. Outline the uses of the complete farm budget for each of the three major points of application.

## FARM 17

Total acres, 97. Acres in crops, 32.7. Open pasture tillable, 2.5. Woods pastured, 10.8. Farmstead, waste, roads, etc., 1. 4 miles from market place. Soil type: sandy loam. Topography: rolling.

### Crops

| Kind | Acres | Total Crop | Sales Amount | Sales Value | Family Use Amount | Family Use Value |
|---|---|---|---|---|---|---|
| Corn (and | 12 | 200 bu. | — | $ — | 5 | $ 10 |
| peas) | (12) | 18 bu. | 14 | 42 | 2 | 6 |
| Cotton lint | 13.7 | 4605 lb. | 4605 | 806 | — | — |
| Cottonseed | — | 3.3 tons | 2.2 | 88 | — | — |
| Cowpea hay | 1 | (pastured and plowed under) | — | — | — | — |
| Peanuts | 2 | 30 bu. | 15 | 44 | 5 | 16 |
| Sweet potatoes | 1 | 40 bu. | — | — | 10 | 20 |
| Irish potatoes | 0.25 | 10 bu. | — | — | 10 | 20 |
| Tree fruits | 1 | — | — | — | — | 50 |
| Watermelons | 1.5 | — | — | 90 | — | 32 |
| Vetch | (7) | — | — | — | — | — |
| Garden | 0.25 | — | — | — | — | 120 |
| Totals | 32.70 | | | $1,070 | | $274 |

### Livestock

| Kind | Beginning of Year No. | Beginning of Year Value | Purchases No. | Purchases Value | Sales No. | Sales Value | Ending of Year No. | Ending of Year Value | Eaten No. |
|---|---|---|---|---|---|---|---|---|---|
| Horses | 1 | $200 | — | $ — | — | $ — | 1 | $ 200 | — |
| Mules | 1 | 350 | 1 | 400 | 1 | 400 | 1 | 400 | — |
| Milk cows | 2 | 240 | — | — | — | — | 2 | 270 | — |
| Heifers, 1 yr. | — | — | — | — | — | — | 2 | 160 | — |
| Calves (2) | 2 | 60 | — | — | — | — | 2 | 60 | — |
| Hogs | 3 | 46 | 3 | 18 | — | — | 3 | 18 | 3 |
| Chickens (75) | 60 | 60 | — | — | 65 | 64 | 30 | 30 | 40 |
| Totals | | $956 | | $418 | | $464 | | $1,138 | |

### Livestock Products

| Items | Amount | Value |
|---|---|---|
| Butter | 312 lb. | $156 |
| Eggs | 208 doz. | 84 |
| Total | | $240 |

### Other Income

| | |
|---|---|
| AAA payments | $246 |
| Cash rent (acres) | 150 |
| Total | $396 |

| | |
|---|---|
| Value of operator's labor (8 months) | $480 |
| Value other unpaid family labor | 134 |
| Land rent | 30 |

## FARM 17 (Continued)

### Summary of Farm Privileges

| | |
|---|---|
| Crops | $ 274 |
| Pork | 380 |
| Chickens | 40 |
| Eggs | 48 |
| Milk | 220 |
| Wood | 50 |
| House rent | 240 |
| Total | $1,252 |

### Current Farm Expenses

| | |
|---|---|
| Wage hands (12 days) | $ 24 |
| Board | 12 |
| Cotton chopping (10 days) | 20 |
| Cotton picking (75 days) | 112 |
| Repairs, machinery | 38 |
| Repairs, buildings | 700 |
| Feed | 190 |
| Salt | 6 |
| Seed and plants | 8 |
| Fertilizer | 190 |
| Veterinary and medicines | 8 |
| Ginning | 68 |
| Machine hire | 8 |
| Auto expense (farm) | 76 |
| Breeding fees | 4 |
| Total | $1,464 |

### Summary of Farm Capital

| Item | Beginning | Ending |
|---|---|---|
| Real estate | $6,764 | $7,120 |
| Livestock | 956 | 1,138 |
| Power machinery | 266 | 200 |
| Other machinery | 702 | 632 |
| Seeds, feeds, etc. | 276 | 244 |
| Totals | $8,964 | $9,334 |

### Summary of Receipts and Expenses

| | |
|---|---|
| Average farm capital | $9,148 |
| Receipts | |
| Crops | $1,070 |
| Livestock sold | 464 |
| Livestock products | 240 |
| Other income | 396 |
| Increase in capital | 370 |
| Total | $2,540 |
| Expenses | |
| Livestock purchased | $ 418 |
| Current | 1,464 |
| Unpaid family labor | 134 |
| Land rent | 30 |
| Total | $2,046 |
| Farm income | $ 494 |
| Interest on capital @ 5% | 458 |
| Labor income | $ 36 |
| Value family living | 1,252 |
| Labor earnings | $1,288 |
| Return to capital | $ 14 |
| Per cent return on capital | 0.15% |

3. Based on the suggestions given in the discussion of the cropping plan and the livestock plan, develop a desirable form for recording the planned crop and livestock system for a farm typical of your area.
4. The summarized inventory and cash account record of Farm 17 is presented on pages 161 and 162. This farm is in the same area and operated under the same conditions as the five farms analyzed in Exercise 10. Based on the strong and weak points of the farms studied in Exercise 10 and on the assumption that cotton prices will be 5 per cent higher and peanut prices 40 per cent higher the following year, while all labor costs will increase 15 per cent, construct a summarized budget of expected receipts and expenses for Farm 17 for the following year.

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Hudelson, Robert R., *Farm Management,* pp. 50–180, New York, The Macmillan Company, 1939.

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# CHAPTER 12

# Federal Income Tax Returns

Most farmers do not need to employ expensive legal talent or accounting experts in order to file accurate and reasonable federal income tax returns. The directions provided with the income tax schedules are quite detailed but are fairly simple. If complete farm records are available, of which the minimum should be inventory and cash account records, and if a careful study is made of the more difficult requirements involved, many farmers should save more than enough to pay for the time and trouble of keeping records by making their own returns. If additional assistance is needed, it can be obtained free of charge from the offices of the Bureau of Internal Revenue. These offices are located in all large cities, and, in addition, during the two or three months before the final date for the returns of most individuals, the collector of internal revenue usually sends representatives to all county seats to assist individuals in the preparation of income tax returns. Announcement of the time of these visits is made in the local newspapers.

The purpose of this chapter is to provide students of farm accounting and farmers with facts that will aid them in making federal income tax returns on farm operations. The information presented herein is believed to be correct but is not intended as a substitute either for careful reading of the instructions printed on income tax schedules or for consultation with federal income tax officials. If this summary is studied carefully in connection with the instructions supplied with the income tax forms, farmers will be able to make satisfactory federal income tax returns. No moral, financial, or legal responsibility, however, is assumed by the author or the publisher for actions based on the interpretations of suggestions presented herein. Such responsibility must

rest with the individual. Also, the information presented necessarily deals with the ordinary situations that will be found in making a farm income tax return. Occasionally, unusual problems will occur in the financial operations of a farm business. In such instances, the farmer should consult a federal income tax official, and decisions concerning such items should be based on his judgment.

### *Requirements for Making a Federal Income Tax Report on Farm Returns*

Although the tax rates, the amount of the personal exemptions allowed, and the detailed methods required in the final computation of the tax are changed from year to year, the general regulations determining the net income from farming operations have varied little since 1930 and are not likely to be changed materially in the near future. Once the net income subject to the tax is computed, the final determination is a simple matter; most of the difficulties in preparing the return are encountered while establishing the final net income.

Farmers are required to file two reports on the financial operations of the farm business for the year. The first, or preliminary, report is due on January 15, if reporting on a calendar year basis, or 15 days after the end of the year, if reporting on a fiscal year basis. This preliminary report requires an estimate of the net income for the year, or the excess of receipts over expenses, and a computation of the year's taxes based on this estimated net income. The total of this estimated tax must be paid by the farmer at the time the preliminary report is filed.

The final return on the farm business is due on or before March 15, if reporting on a calendar year basis, or 2½ months after the end of the official year, if reporting on a fiscal year basis. In this report, the farmer is required to make a final detailed summary of his expenses and receipts, list his exemptions and other personal deductions, and compute his final income tax for the year. If the final tax as computed in this report is smaller than the estimated tax actually paid when the preliminary report was filed two months earlier, the difference is refunded to the farmer by the collector of internal revenue with interest from the time

the sum was paid until the time of the refund. If the final tax is larger than the estimated tax, the farmer is required to pay the difference at the time the final report is made.

For all practical purposes, many farmers will not have to file both the preliminary and the final return. If farmers keeping inventory and cash accounts or other records of the expenses and receipts for the year immediately summarize their records at the end of the year, they will find that they have sufficient information to make the final return within the 15-day limit after the end of the year. In such instances, it is permissible and preferable for the farmer to compute the early return in detail. He should make a note on the top of the first page that this is his final return, and, writing out the check for the amount of the tax, mail the report to the collector and forget about the final return two months later. This will require slightly more work early in the year but much less total effort in the end and will save time later when every minute is needed in spring planting.

Under the provisions of 1948 federal income tax laws any farmer who received in the taxable year as much as $600 or more from the sale of crops, livestock, livestock products, and other farm products, plus miscellaneous income from other sources, such as work off the farm and soil conservation payments, is required to file a federal income tax return. This requirement holds true regardless of whether the producer is married, single, a minor, or has one or more dependents. While this minimum gross-income provision may be changed from year to year, it is usually so low that practically all farmers are required to prepare a federal income tax return. Even if the minimum gross income were doubled, which is unlikely, most farmers still would have to file a return because the requirement is based on gross income, or everything that is sold, before expenses are deducted.

This does not mean that every farmer receiving this minimum gross income from all sources will necessarily have to pay a tax. In computing the tax, farmers are permitted deductions from their total receipts for all the necessary business expenses of operating the farm. In addition, they receive the usual personal exemption deduction and other specified deductions, such as contributions to charity, personal taxes, and credits for dependents,

which are allowed all individuals, regardless of occupation or source of income. Nevertheless, if a farmer collects the minimum or above from all sources, he is required under the law to file a return, regardless of whether or not he finds that he has a tax liability. Because of this gross-income requirement, many farmers with dependents and the usual expenses incurred in operating a farm are required to file a return but do not have to pay a tax.

All farmers need two different report forms to complete their annual federal income tax returns. These schedules are Form 1040F, which is the record of receipts and expenses for the farm business and the computation of the net income from farming, and Form 1040, which is the usual personal income tax return required of all individuals and on which the net income from farming and all other sources is recorded, the exemptions are stated, the personal deductions are listed, and the final tax is computed. Farmers are not permitted the use of the short form, Form 1040A, because of the nature of their business. In addition, if the farmer chooses to file both a preliminary return and a final return rather than preparing the earlier return as the complete report, he will need copies of Form 1040ES for the declaration of estimated tax due. Also, any farmer who during the year paid wages amounting to the minimum gross income required for filing under the law to any one farm worker should obtain copies of Form 1099 and Form 1096 on which he is required to report such wages to the Bureau of Internal Revenue.

Producers living in the "community property" states have the privilege of filing a separate return for both husband and wife and dividing all receipts and expenses equally. If the amount of taxable income after the deduction of personal exemptions and other allowable expenses is more than $2,000, it is advisable to take advantage of this provision in community property states. The net result is that an equal division of receipts and expenses, and the resulting net income, between the two reports will keep a larger part of the net income in the lower surtax brackets and thus save on the total amount of the tax to be paid. A reproduction of Form 1040F, the basic schedule needed by most farmers, is found in this chapter.

FORM 1040 F
(Revised August 1940)
Treasury Department
Internal Revenue Service

Page 1

# UNITED STATES
# SCHEDULE OF FARM INCOME AND EXPENSES
## For Calendar Year 194..

Attach This Form to Your Income Tax Return Form 1040 and File It With the Collector of Internal Revenue for Your District

Or for year beginning ............., 194.., and ending ............., 194..

Name ........................................
Address ........................................
Location of farm or farms ........................................
Number of acres in each farm ........................................

Fill in Pages 1 and 3 if Your Accounts Are Kept on a Cash Basis.
If You Keep Books on an Accrual Basis and Desire to Use This Form, Fill in Pages 2 and 3 Instead

FARM INCOME FOR TAXABLE PERIOD COMPUTED ON A CASH RECEIPTS AND DISBURSEMENTS BASIS

1. SALE OF LIVESTOCK RAISED

| Kind | Quantity | Amount |
|---|---|---|
| Cattle | | $ |
| Horses | | |
| Mules | | |
| Sheep | | |
| Swine | | |
| | | |
| | | |
| Chickens | | |
| Turkeys | | |
| Ducks | | |
| Goats | | |
| Bees | | |
| Other (specify): | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| TOTAL | | $ (Enter on line 1 of summary below) |

2. SALE OF PRODUCE RAISED

| Kind | Quantity | Amount |
|---|---|---|
| Grain | | $ |
| Hay | | |
| Cotton | | |
| Tobacco | | |
| Potatoes | | |
| Sugar beets | | |
| Vegetables | | |
| Fruits | | |
| Nuts | | |
| Dairy products | | |
| Eggs | | |
| Meat products | | |
| Poultry, dressed | | |
| Wool and mohair | | |
| Honey | | |
| Sirup and sugar | | |
| Other (specify): | | |
| TOTAL | | $ (Enter on line 2 of summary below) |

3. OTHER FARM INCOME

| Items | Amount |
|---|---|
| Mdse. rec'd for produce | $ |
| Machine work | |
| Hire of teams | |
| Breeding fees | |
| Rent rec'd in crop shares | |
| Work off farm | |
| Wood and lumber | |
| Other forest products | |
| Agricultural program payments | |
| Other (specify): | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| TOTAL | $ (Enter on line 3 of summary below) |

4. SALE OF LIVESTOCK AND OTHER ITEMS PURCHASED

| 1. Description | 2. Date acquired | 3. Gross sales price (contract price) | 4. Cost or other basis | 5. Depreciation allowed (or allowable) since acquisition or March 1, 1913 | 6. Profit (column 3 plus column 5 minus column 4) |
|---|---|---|---|---|---|
| | | $ | $ | $ | $ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| TOTAL (enter on line 4 of summary below) | | | | | $ |

SUMMARY OF INCOME AND DEDUCTIONS COMPUTED ON A CASH RECEIPTS AND DISBURSEMENTS BASIS

| | | | |
|---|---|---|---|
| 1. Sale of livestock raised | $ | 6. Expenses (from page 3) | $ |
| 2. Sale of produce raised | | 7. Depreciation (from page 3) | |
| 3. Other farm income | | 8. Net operating loss deduction (attach statement) | |
| 4. Profit on sale of livestock and other items purchased | | | |
| 5. GROSS PROFITS | $ | 9. TOTAL DEDUCTIONS | $ |

10. Net farm profit (line 5 minus line 9) to be reported on line 22, Schedule C, page 2, Form 1040 ........ $

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## FARM INVENTORY FOR INCOME COMPUTED ON AN ACCRUAL BASIS

Page 2

| Description (Kind of livestock, crops, or other products) | On Hand at Beginning of Year | | Purchased During Year | | Raised During Year | | Consumed or Lost During Year | | Sold During Year | | On Hand at End of Year | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity | Inventory value | Quantity | Amount paid | Quantity | Inventory value | Quantity | Inventory value | Quantity | Amount received | Quantity | Inventory value |
| | | $ | | $ | | $ | | $ | | $ | | $ |
| Totals | | $ (Enter on line 4) | | $ (Enter on line 5) | | $ | | $ | | $ (Enter on line 2) | | $ (Enter on line 1) |

## SUMMARY OF INCOME AND DEDUCTIONS COMPUTED ON AN ACCRUAL BASIS

1. Inventory of livestock, crops, and products at end of year ........ $
2. Sales of livestock, crops, and products during year ........

2a. Other miscellaneous receipts (specify):

3. Total ........ $
4. Inventory of livestock, crops, and products at beginning of year ........ $
5. Cost of livestock and products purchased during year ........
6. Gross profits (line 3 minus the sum of lines 4 and 5) ........ $

7. Expenses (from page 3) ........ $
8. Depreciation (from page 3) ........
9. Net operating loss deduction (attach statement) ........

10. Total Deductions ........ $

11. Net farm profit (line 6 minus line 10) to be reported on line 22, Schedule C, page 2, Form 1040 ........ $

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**FARM EXPENSES FOR TAXABLE YEAR** (See Instructions)

Page 3

| 1. Items | 2. Amount | 3. Items (Continued) | 4. Amount (Continued) |
|---|---|---|---|
| Labor hired | $ | Other farm expenses (specify): | |
| Feed purchased | | | $ |
| Seed and plants purchased | | | |
| Machine hire | | | |
| Supplies purchased | | | |
| Cost of repairs and maintenance | | | |
| Breeding fees | | | |
| Fertilizers and lime | | | |
| Veterinary and medicine for livestock | | | |
| Gasoline, other fuel and oil for farm business | | | |
| Storage and warehousing | | | |
| Taxes | | | |
| Insurance on property (except your dwelling) | | | |
| Interest on farm notes and mortgages | | | |
| Water rent, electricity, and telephone | | | |
| Rent of farm, part of farm, or pasturage | | | |
| Freight, yardage, express, and trucking | | | |
| Automobile upkeep (farm share) | | | |
| Total of Columns 2 and 4 (enter on line 6 of summary on page 1 (cash basis) or line 7, page 2 (accrual basis)) | | | $ |

**DEPRECIATION** (See Instructions)

| 1. Kind of property (if buildings, state material of which constructed) | 2. Date acquired | 3. Cost or other basis (do not include land or other nondepreciable property) | 4. Assets fully depreciated in use at end of year | 5. Depreciation allowed (or allowable) in prior years | 6. Remaining cost or other basis to be recovered | 7. Estimated life used in accumulating depreciation | 8. Estimated remaining life from beginning of year | 9. Depreciation allowable this year |
|---|---|---|---|---|---|---|---|---|
| | | $ | $ | $ | $ | | | $ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total (enter on line 7 of summary on page 1 (cash basis) or line 8, page 2 (accrual basis)) | | | | | | | | $ |

Remarks:

[illegible]

## Records Needed to Prepare Federal Income Tax Returns

There are no definite laws about the kinds of records used in the preparation of a farm income tax return as long as the required data are presented and summarized in the proper manner. If a farmer has not "kept books," he will need to develop the best statement he can for his items of income and expense. He will probably find that there are various records on file-bills, statements, and canceled checks that will help fix the exact amount of many items. The other necessary figures must be estimated as accurately as possible; the farmer must be careful to remember that if a mistake is made, it is much safer to overestimate the income and underestimate the expenses than to do the reverse. It is also much more expensive. However, the burden of proof is upon the individual if the collector raises any question about his return.

A good farm account book will be very helpful in suggesting the various items that may have entered into income or expense. It will serve as a check list to insure that all items of cost and return are considered. The same book actually used the following year will greatly simplify the work on the tax return and will probably save money as well. It is relatively easy to estimate the receipts obtained from the farm for the year; returns usually come in as large sums at infrequent intervals and are remembered easily. It is much more difficult to estimate the farm expenses. On most farms some costs are incurred almost every working day of the year; these items are small but frequent and difficult to remember at the end of the year. As a result, farmers who do not keep records of their business operations usually pay a larger federal income tax than required, because of the omission of many expenses from the summary report.

Farmers are permitted under federal income tax regulations to compute their income and expenses on either a simple cash receipts and cash disbursements basis or on an accrual basis, but the method originally adopted must be followed until the consent of the Commissioner of Internal Revenue is received to compute the return on a new basis. The return on the cash basis includes all cash income received and all allowable expenses paid in cash

during the taxable year, regardless of the time or the year the income was earned or the expenses were incurred. On this basis, if the cash came in during the year, it was a receipt; if cash was paid out during the year for an allowable expense item, it was an expense. The return on the accrual basis includes all income earned and all allowable deductions or expenses incurred for the taxable year, regardless of whether the income or the expenses were cash or credit. On a cash basis, gross income includes all cash received during the year from the sale of farm products produced that year or in an earlier year, but it does not include either products sold on credit or non-cash changes in the inventory values of productive livestock or supplies on the farm. The cash business expenses include all expenses paid in cash during the year, for that year or any other year, but do not include expenses incurred and not paid.

On the accrual basis, gross income includes all income received or earned during the taxable year, from that year's business only. This income includes cash sales of items produced that year, the non-cash value of inventory increases in livestock, supplies, and other farm products, plus any other income earned but not received. The allowable business expenses include all expenses for that year's business only, regardless of whether these expenses were paid, or incurred and unpaid.

The farm records needed when reporting on a cash basis are a classified list of cash farm receipts and cash farm expenses and inventories of buildings, fences, machinery, and tools at the beginning and end of the taxable year for the purpose of determining the amount of depreciation. All this information can be obtained from the regular combined inventory and cash account record. When reporting on the accrual basis, the same records are needed, with the addition of accounts receivable, accounts payable, and a very detailed inventory of all farm property, including those of livestock, grain, hay, and other farm products and supplies.

In any one year, the net farm income and the resulting tax liability are likely to differ, depending on whether the return is made on the cash or on the accrual basis. Over a period of years, the net farm income will tend to average out the same, regardless of which method of reporting is used. In instances

where there is a very wide variation in cash farm income from year to year, the total tax paid over a period of years may be higher when reporting on the cash basis than when reporting on the accrual basis because the income each year is taxed separately. If the net income one year does not equal allowable deductions for personal exemptions and credits for dependents, the balance cannot be carried forward and used to reduce taxable income in later years. Thus, farmers who have a type of business in which cash crops may be stored and the production of two or more years sold at one time, or who produce crops or operate livestock enterprises requiring more than one year for the realization of income, may find it to their advantage to file their annual federal income tax return on the accrual basis in order to prevent wide fluctuations in income from year to year. This is possible, however, only if complete inventory records, complete cash expense and receipt records, and complete payable and receivable records are kept during the year.

Most farmers do not keep sufficient records to report on an accrual basis; consequently, they must report on the cash basis. Farmers who have a relatively uniform cash income from year to year will find it easier to file the return on the cash basis even if accrual records are kept. As a result, about 90 per cent of all farm income tax returns filed in the United States are prepared on the cash basis.

## *Items Included in Farm Income*

Farm returns for income tax purposes, when reporting on the cash basis, are the sum of four groups of items: (1) the amount of cash or the value of merchandise or other property received from the sale of livestock raised during the taxable year or in previous years; (2) the same for livestock products, all crops, and other farm products raised or produced and sold or traded; (3) the profits from the sale of any livestock or farm products which were purchased; and (4) miscellaneous farm income such as work off the farm, soil conservation payments, rent collected, and oil royalties.

Farm returns on the accrual basis include all income received or accrued during the taxable year for that year's business only.

This income includes cash sales of farm commodities produced during the year, income earned but not received, and increases in the inventory value of livestock, supplies, and other farm products.

The farmer reporting on the cash basis fills out pages 1 (receipts on a cash basis) and 3 (expenses on a cash basis) of Form 1040F, and the farmer reporting on the accrual basis uses page 2 (income on an accrual basis) and page 3 (expenses on an accrual basis).

There are certain special income problems peculiar to farming operations which must be considered. Income from non-farm sources, such as interest on a savings account or the salary received for driving the school bus should not be reported as part of the farm income but should be included in the summary form, Form 1040. Also, the value of farm products such as eggs, milk, and vegetables produced on the farm and consumed in the farm household should not be reported as farm income; the cost of producing these products, however, should not be included in the farm expenses. If eggs or other farm products are traded for merchandise or services, the value of the merchandise or service received must be reported as cash income.

## *Items Included in Farm Expenses*

Farm expenses which may be deducted in arriving at the net income are, in general, all expenses necessary to the operation of the farm as a business enterprise. These expenses include hired labor, supplies used in production such as feed, seed, fertilizer, containers, gasoline and oil, usual farm repairs on equipment and farm buildings which do not increase the value of the items repaired, harvesting charges, insurance on farm buildings and equipment, certain taxes, interest paid arising from the farm business, hauling costs, cash rent paid, and depreciation on farm buildings, machinery, equipment, and certain livestock.

On the cash basis, the allowable expenses include all costs paid in cash during the taxable year, whether these expenses were incurred in that year or in any previous year, but do not include expenses incurred in the taxable year which were not paid for in cash by the end of the year. On the accrual basis, the allowable

expenses include all expenses for that year's business only, regardless of whether these costs were paid or incurred but unpaid.

Most farmers are successful in establishing their total income for the taxable year in the income tax return since the income is received in several large lump sums and is easily remembered and recorded. Many farmers, however, omit some of the expense items which are legally deductible and thus pay a larger tax than they should. This is true especially of farmers who do not keep some record of their expenses during the year. In preparing the federal income tax return on farming operations, special care should be taken that all expenses are included. The expense list printed on page 3 of Form 1040F is intended as a general guide only; the headings are suggestions only, and the farmer may classify his expenses according to the classification used in his records and include other expenses in the many blank spaces provided near the end of the expense schedule. If necessary, additional pages may be added.

The basic rule to follow in listing farm expenses for income tax purposes is to include all the expenses which were necessary to operate the farm and produce the farm income. For instance, personal expenses, such as groceries for the farm family, are not deductible, but food and other supplies purchased and given to the hired labor force as part of their pay are legitimate farm expenses; most farmers include the direct cash cost of hired labor but few remember to include the other costs incurred to keep the labor on the farm. In a similar manner, repairs to the farm home area are not deductible, but repairs to houses furnished for hired labor are part of the costs of farming.

Practically all farmers use their personal automobiles for farm as well as personal use in buying supplies, transporting hired labor, and in similar ways, but few remember to include a percentage of the operating and depreciation costs on the automobile as part of the farm expenses. Telephone and electrical costs are omitted frequently. Shotgun shells used in hunting during the winter are personal expenses and are not deductible but ammunition (and even a part of the depreciation costs of the gun) used to destroy predatory wild-life in fields of growing crops appear to be legitimate farm expenses.

In the determination of farm expenses, care should be taken that any costs for the farm home are not included. For income tax purposes, the farm home is not considered a part of the farm business, and expenses for the home, such as repairs, taxes, and insurance on the farmer's dwelling and contents, are not deductible.

## Determination of Depreciation

Deductions for capital expenditures are not allowed for such items as the purchase of workstock or tractors, combines, or other farm machinery; for the costs of digging a new well and establishing pumping equipment; for the addition of new buildings or the improvement of old ones; or for other similar long-time farm expenses. Farmers are permitted, however, to charge as expenses a normal rate of depreciation on all these items.

The amount of depreciation computed for each item depends on the "useful life of the property." This period of utility varies greatly with the kinds of property and the conditions of wear. The taxpayer may set his own tentative rate of depreciation on each item or group of items, but after it is accepted by the Bureau of Internal Revenue, he is required to employ this rate for the entire period of utilization. The best basis for establishing depreciation rates is the individual farmer's judgment of the durability of a new tractor or truck under his own special conditions. If he is in doubt, he should discuss these depreciation problems with representatives of the Bureau of Internal Revenue.

Because the same depreciation rates are expected to be used throughout the life of the item, the inventories of depreciable property should be prepared very carefully before the first income tax return is filed. To have a basis for determining the depreciation allowable, the farmer is expected to supply the following information for each item: the kind of property, date acquired, total cost, estimated useful life, depreciation allowed or allowable in previous years, remaining cost to be recovered, and depreciation allowable for the taxable year. The most accurate way to be sure that this information is available when needed is to take a farm inventory at the end of each taxable year. Regardless of

whether the return is made on the cash or the accrual basis, the same inventory information is needed in the determination of depreciation.

## Special Problems in Reporting Livestock Sales

Ordinary livestock sales, such as the sales of pigs raised or purchased, poultry, and feeder calves, are considered as direct farm income and are reported along with sales of crops and other farm products. Since 1947, however, farm taxpayers have been permitted, under certain circumstances, to consider the sale of dairy, breeding, or workstock as a sale of capital assets. This means that only 50 per cent of the gain from such sales is taxable —a large saving in taxes. This new ruling gives the livestock farmer the same privilege that the real estate or stock market investor has had for many years, in that only one-half of the net profit from the sale of long-time capital assets is taxable.

For the sale of dairy, breeding, and workstock to be considered as the sale of a capital asset, the following requirements must be met: (*a*) the animals must have been the property of the farmer for more than six months and (*b*) the sale must have reduced the normal size of the herd or made room for replacements to change the quality or breed of the herd. This means that sales of calves or surplus feeder animals are not to be considered as capital assets, but that sales of breeding stock or the disposal of poorer quality animals which were replaced by higher quality stock do come under the classification of capital assets. Many sales of livestock which previously have been listed on farms as ordinary income can be classified as capital assets and the income tax on the profits from these sales reduced by one-half of the amount previously paid.

A farmer's claim that a sale of livestock is the sale of a long-time capital asset should be reported on Schedule D of Form 1040 (the final summary form on which the tax is computed) and should not be reported on the farm expense and receipts schedule, Form 1040F. Accompanying this report should be an explanatory statement proving that the sale was of a long-time capital asset and did reduce the normal size of the herd or make room for

replacements in the breeding herd. The indicated changes in inventory values of the breeding herd from the beginning to the end of the year, as obtained from the annual farm inventory, may be sufficient evidence for this purpose.

## EXERCISE 12

1. Study carefully the instruction included with federal income tax schedules Form 1040 and Form 1040F for the current year and answer the following questions:
   - (*a*) What determines a farmer's liability to file a federal income tax return?
   - (*b*) Is every person filing a return required to pay a tax?
   - (*c*) What farm records are necessary when reporting on a cash basis?
   - (*d*) What farm records are necessary when reporting on the accrual basis?
   - (*e*) What are the restrictions placed on shifting from one basis of reporting to the other? Why?
   - (*f*) If eggs are traded for merchandise, is the value of the merchandise regarded as income? Why?
   - (*g*) How is the purchase of a tractor handled on the farm schedule in computing the net farm income?
2. The receipts and expenses and inventories for Farm 18 are summarized in this chapter. The operator is married and has a 10-year-old daughter and a 20-year-old son in college. The son helped on the farm for 3 months during the summer; he was paid no regular wage, but his time was valued at $240 for the 3 months and the value of his board at $120. During the year, the family paid $30 to the church, $30 to the Red Cross, and $10 to the Community Chest; taxes on amusements were $10, and on cigarettes, $44; and 2,434 gallons of gasoline were used in the car for personal driving on which 7 cents state and 1½ cents federal tax per gallon was paid. The taxes on the operator's house were $45.86. The personal share of the automobile license fee was $11.20.

   Based on these facts, complete the following:
   - (*a*) On one copy of Form 1040F for the current year, compute in detail the income tax for this farmer on the cash basis, transfer the net farm profit to a copy of Form 1040, and compute the tax to be paid.
   - (*b*) On another copy of Form 1040F, compute in detail the income tax for this farmer on the accrual basis, transfer the net farm profit to a copy of Form 1040, and compute the tax to be paid.
   - (*c*) Explain the difference between the tax paid according to the method of computation.

## INVENTORIES, FARM 18

| | Beginning No. | Beginning of Year | Ending No. | Ending of Year |
|---|---|---|---|---|
| **Buildings:** | | | | |
| Operator's house | | $3,560 | | $ 3,560 |
| Tenant house | | 900 | | 1,000 |
| Barns | | 3,760 | | 3,760 |
| Silos | | 100 | | 100 |
| Hen house | | 140 | | 140 |
| Sheep shed | | 20 | | Burned |
| Chicken and tool shed | | 300 | | 300 |
| New tool shed and hen house | | 270 | | 1,920 |
| Corn house | | 100 | | 100 |
| Garage and wood shed | | 100 | | 100 |
| Shop | | 60 | | 40 |
| Farm fences | | 380 | | 360 |
| Drains | | 180 | | 160 |
| | | $9,870 | | $11,540 |
| **Land:** | | | | |
| 91 acres cropland | | $6,370 | | $6,370 |
| 83.5 acres pasture | | 1,670 | | 1,670 |
| 59.2 acres woods | | 1,184 | | 1,184 |
| 2.1 acres farmstead and waste | | — | | — |
| | | $9,224 | | $9,224 |
| **Livestock:** | No. | | No. | |
| Horses | 2 | $ 800 | 2 | $ 600 |
| Colts | — | — | 1 | 80 |
| Hens | 166 | 332 | 410 | 816 |
| Cows | 27 | 5,930 | 28 | 6,290 |
| Heifers | 14 | 1,250 | 14 | 1,310 |
| Herd bull | 1 | 300 | 1 | 300 |
| Bull calves | — | — | 1 | 50 |
| Sows | 1 | 80 | 1 | 80 |
| Shoats | 2 | 60 | 3 | 48 |
| | | $8,752 | | $9,574 |
| **Auto and tractor:** | | | | |
| Buick auto | | | | |
| farm | | $150 | | $150 |
| personal | | 350 | | 350 |
| John Deere 10–20 | | 850 | | 750 |
| **Equipment:** | | | | |
| Dairy equipment | | $ 643.00 | | $ 591.00 |
| Poultry equipment | | 107.00 | | 107.00 |

## INVENTORIES, FARM 18 (Continued)

| | Quantity | Beginning of Year | Quantity | Ending of Year |
|---|---|---|---|---|
| Plows | | $ 128.00 | | $ 114.00 |
| Fitting tools | | 38.00 | | 40.00 |
| Cultivators | | 4.00 | | 4.00 |
| Hay equipment | | 398.00 | | 358.00 |
| Grain equipment | | 284.00 | | 254.00 |
| Silage equipment | | 460.00 | | 460.00 |
| Potato equipment | | 34.00 | | 24.00 |
| Harnesses | | 128.00 | | 116.00 |
| Wagons | | 172.00 | | 156.00 |
| Manure spreader and sleds | | 168.00 | | 144.00 |
| Miscellaneous equipment | | 485.00 | | 485.00 |
| | | $3,049,00 | | $2,853.00 |
| Inventory of feeds and supplies: | | | | |
| Oats | 410 bu. | $ 574.00 | 380 bu. | $ 380.00 |
| Ear corn | 50 bu. | 45.00 | 1,245 bu. | 871.50 |
| Hay | 50 tons | 950.00 | 42 tons | 1,276.00 |
| Corn silage | 100 tons | 922.96 | 109 tons | 1,002.00 |
| Straw | 8 tons | 84.00 | 4 tons | 48.00 |
| Potatoes | 7 bu. | 7.00 | 105 bu. | 126.00 |
| Cattle feed | 1,800 lb. | 64.80 | 2,200 lb. | 88.00 |
| Miscellaneous feed | | 23.90 | | 46.10 |
| Wood | 13 cd. | 156.00 | 15½ cd. | 186.00 |
| Gas, oil, and fuel | | 107.26 | | 123.74 |
| Posts | 350 | 85.00 | 350 | 85.00 |
| Building materials | | 1,505.10 | | 211.08 |
| Seed | | 17.16 | | 37.40 |
| Feed bags | | 4.96 | | 8.20 |
| Fertilizer and lime | | — | | 249.00 |
| Corn fodder | | — | 7 tons | 30.00 |
| | | $4,547.14 | | $4,768.02 |
| Accounts receivable: | | | | |
| PCA stock | | $ 80.00 | | $ 80.00 |
| FLB stock | | 500.00 | | 500.00 |
| December milk check | | 741.48 | | 860.00 |
| Lumber sold | | 8.64 | | 8.64 |
| Pullets sold | | 52.80 | | — |
| Pork sold | | 70.00 | | 62.00 |
| SCS payment | | — | | 42.00 |
| 120 doz. eggs | | — | | 72.00 |
| | | $1,452.92 | | $1,624.64 |
| Cash on hand and in bank | | $ 154.98 | | $ 813.72 |

| | Beginning of Year | Ending of Year |
|---|---|---|
| Accounts payable: | | |
| FLB mortgage | $13,600.00 | $11,995.00 |
| PCA note | 460.00 | 1,200.00 |
| Feed and fertilizer bill | 1,763.06 | 1,521.76 |
| Milking machine repairs | 114.12 | — |
| Combining | 56.00 | — |
| Labor | — | 60.00 |
| Farm rent | — | 100.00 |
| Gas and oil | — | 63.00 |
| | $15,993.18 | $14,939.76 |

SUMMARY OF RECEIPTS

| | Cash | Accounts Receivable Accrued during Year |
|---|---|---|
| 4 cows | $ 682.00 | $ — |
| 19 calves | 234.20 | — |
| 16 pigs | 151.00 | — |
| ½ hog | 23.20 | — |
| 46 hens | 48.62 | — |
| 3 tons hay | 87.50 | — |
| 2 bu. potatoes | 2.00 | — |
| 72 tons cabbage | 1,448.00 | — |
| 2,060 cwt. milk | 7,728.34 | 860.00 |
| 1,471 doz. eggs | 714.86 | 72.00 |
| 30 days outside work | 544.00 | — |
| Dividends from feed cooperative | 67.76 | — |
| Gasoline sold | 31.76 | — |
| Feed bags sold | 181.40 | — |
| Building supplies sold | 33.60 | — |
| Fire insurance received | 23.76 | — |
| Agricultural Conservation payment | 152.00 | 42.00 |
| Received on pullets sold last year | 52.80 | — |
| Borrowed from PCA | 1,600.00 | — |
| Received December milk check | 741.48 | — |
| Received payment on pork sold last year | 52.80 | — |
| Received part payment on hay sold last year | 8.00 | — |

SUMMARY OF EXPENDITURES

| | Cash | Accounts Payable Accrued during Year |
|---|---|---|
| Expenses: | | |
| Hired labor | $1,348.28 | $ 60.00 |
| Purchased feed | 1,797.04 | 1,521.76 |
| Seeds | 234.78 | — |

## INVENTORIES, FARM 18 (*Continued*)

| Expenses: | Cash | Accounts Payable Accrued during Year |
|---|---|---|
| Machine hire | $ 77.10 | $ — |
| Supplies purchased | 31.30 | — |
| Cost of repairs and maintenance | 286.74 | — |
| Milk tester | 93.00 | — |
| Fertilizer and lime | 489.82 | — |
| Veterinary and medicine | 45.50 | — |
| Fuel and oil for farm work | 156.64 | 63.00 |
| Farm share of auto | 73.56 | — |
| Taxes, farm share | 482.76 | — |
| Insurance on farm property | 51.26 | — |
| Interest on farm notes and mortgage | 523.72 | — |
| Electricity and telephone | 111.08 | — |
| Rent of farm | 100.00 | 100.00 |
| Horseshoeing | 25.00 | — |
| Hay bought standing | 40.00 | — |
| Miscellaneous expense | 34.94 | — |
| New tool shed and hen house | 1,651.28 | — |
| 500 chicks bought | 97.50 | — |
| Paid on mortgage | 1,605.00 | — |
| Paid on PCA notes | 860.00 | — |
| Paid Barber & Chalmers (feed) | 1,763.06 | — |
| Paid L. V. Ray, last year's milking machine repair | 114.12 | — |
| Paid March Morrow for last year's combining | 56.00 | — |
| Repairs on operator's house | 50.60 | — |
| Taxes on operator's house | 91.72 | — |
| Insurance on operator's house | 10.26 | — |
| Living expenses | 1,900.00 | — |

The farmer filed an income tax return for the first time last year. At that time he decided on the following schedule of depreciation for buildings, fences, and farm machinery. The new tool shed and hen house is to be added for the first time this year.

| Item | Inventory Basis | Value Last Year | Estimated Life | Annual Depreciation |
|---|---|---|---|---|
| Buildings other than operator's dwelling | Cost | $6,000 | 30 yr. | $200 |
| Drains | Cost | 200 | 10 yr. | 20 |
| Farm fences | Cost | 400 | 10 yr. | 40 |
| Farm machinery | Market | 3,420 | — | — |
| Auto, farm share | Market | 200 | — | — |
| Auto, personal share | Market | 400 | — | — |
| Tractor | Market | 1,000 | — | — |
| New tool shed and hen house | Cost | | 25 yr. | |

### Inventory Summary

| | Beginning of Year | | Ending of Year |
|---|---|---|---|
| Assets: | | | |
| Buildings and improvements | $ 9,870.00 | | $11,540.00 |
| Land | 9,224.00 | | 9,224.00 |
| Livestock | 8,752.00 | | 9,574.00 |
| Tractor and farm share of auto | 1,000.00 | | 900.00 |
| Equipment | 3,049.00 | | 2,853.00 |
| Feeds and supplies | 4,547.14 | | 4,768.02 |
| Personal share of auto | 350.00 | | 350.00 |
| Accounts receivable | 1,452.92 | | 1,624.64 |
| Cash on hand and in bank | 154.98 | | 813.72 |
| Total assets | $38,400.04 | | $41,647.38 |
| Liabilities: | | | |
| Mortgage, notes, and accounts payable | 15,993.18 | | 14,939.76 |
| Net worth | $22,406.86 | | $26,707.62 |
| Net gain for year | | $4,300.76 | |

### Labor Income Summary

| | | |
|---|---|---|
| Farm receipts: | | |
| Cash farm receipts | $12,163.96 | |
| Accrued receipts | 974.00 | |
| Increase in farm capital | 2,416.88 | |
| Total farm receipts | | $15,554.84 |
| Farm expenses: | | |
| Cash farm expenses | $7,903.88 | |
| Accrued farm expenses | 1,744.76 | |
| Unpaid labor and board | 360.00 | |
| Total farm expenses | | $10,008.64 |
| Farm income | | $ 5,546.20 |
| Interest on average farm capital of $____ at 5 per cent | | 1,882.52 |
| Labor income | | $ 3,663.68 |

## REFERENCES

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# CHAPTER 13

# Credit Records for the Farm Business

There are two ways to develop a knowledge of accounting: first, by setting up a series of definite rules and regulations for every possible specific kind of financial transaction and providing a detailed outline of each step needed in the process of keeping the records for a given situation; and second, by developing a different system of records with flexible rules and regulations according to the varying needs and qualifications of the business and the individual, and providing certain basic principles which, with minor adjustments, will fit a number of different situations. In general, the plan in this study of farm records and accounts has been to approach farm accounting problems by the second method—logic—rather than by the first method—a set of rules and regulations. Although the rigid rules and regulations basic to the establishment of the typical double-entry bookkeeping system have been indicated to be the best approach in developing and using satisfactory accounting systems for most business enterprises, a flexible approach by reasoning rather than by rules appears to be the one best adapted to farm accounting problems because of the wide variation in the quality and quantity of records needed and the varying ability of different farmers to keep and use farm records.

Thus far, a system of records and a possible range of uses for each of three major situations has been developed. Within each system, the possibilities for changing the rules have been indicated. Starting from the simplest and moving to the more complex farm records, the three major records analyzed have been the farm inventory, the cash account, and the combined farm inventory and cash account. The next typical situation, which is a somewhat more complicated one, is a system of records for a

farmer who wants and can use a record of all cash received and paid out; a summary of net worth and changes in net worth; some knowledge of the amount which his farm business as a whole made or lost during the year; and, in addition, a detailed record of the amount of his debts and to whom he is indebted along with the date when the sum is to be paid, and a detailed record of the item, amount, and the names of those owing him, showing the date when payment is due and the manner in which it is to be collected.

## Credit Accounts

The simplest system of records which can be developed and kept for these purposes consists of a farm inventory taken at the beginning and the end of the farm year, an account of the cash expenses and cash receipts during the year, and two additional accounts, a record of accounts receivable and one of accounts payable. This system differs from those studied previously in that for the first time the bookkeeping system is divided into a series of detailed accounts.

Usually an account is considered to be a detailed summary of the receipts and expenses or debits and credits for some part of the business. A record is an organized system containing one or more detailed accounts of the different parts of the business plus supplementary information relating to physical quantities. A given record may be made up of only one account or of many different accounts. For the simpler records systems, the complete record is actually one account. The farm inventory is a single account designed to measure net worth. The cash record of receipts and expenses is another single account developed to show changes in cash transactions during the year, and the combined inventory and cash account is a simple system of farm records made up of two different accounts.

To obtain more detailed information about the farm business, however, the complete record system must be broken down into smaller units than the inventory and cash account. This is especially true if any data are needed for credit transactions or if information is needed for costs and returns on an accrual basis. In addition, the best system of records which will provide all the

information supplied by the inventory and cash account and will give the necessary credit and accrual information for the business as a whole is one including four major accounts: (1) the inventory account, (2) the cash account, (3) accounts receivable, and (4) accounts payable.

## Organization of the Account

The usual single account is organized according to the outline given herewith.

| Debits | Credits |
|---|---|
| All charges to the account<br>Entries on the left<br>Includes all that is put in | All credits to the account<br>Entries on the right<br>Includes all that is taken out |
| Resources at beginning of year<br>Increase in resources during year<br>Items put in during year | Items taken out during year<br>Decrease in resources during year<br>Resources at end of year |
| Decrease in debts during year<br>Debts at end of year | Debts at beginning of year<br>Increase in debts during year |

This account, usually called the T-account, may be compared to a box in which all the resources involved in the account are kept, with the debits placed on one side and the credits on the other. Accounts of this kind are kept on the accrual basis only. If everything is to be kept in one box, then there is only one account. If it is desirable in the interests of efficiency to modernize and expand this system, the number of boxes is increased accordingly. If all the wood is stored in one box, the wood is available but is difficult to sort in order to find the kind needed at any time. If four different boxes are provided, a box for backlogs, a box for heavy wood, a box for light wood, and a box for tinder, the ease in obtaining wood and the usefulness of the wood boxes are increased. Thus, a system of farm records expanded from two accounts (the inventory and cash account) to four accounts (inventory, cash account, accounts receivable, accounts

payable) will supply more details about the operations of the farm business.

The T-account is the basis of all commercial bookkeeping systems, as it is actually a ledger account; a series of ledger accounts comprise the books of final entry in the double-entry bookkeeping system after the data have been listed originally in the journal records. However, as suggested herein for use in recording payables and receivables and as used in most farm record systems, it is not part of a double-entry system, because the T-account is used as the point of original and of final entry.

## *Use of the T-account*

The four different T-accounts needed to make up the system of records outlined in this chapter are listed in this section.

1. INVENTORY

| Debits | Credits |
|---|---|
| Beginning inventory | Ending inventory |

2. CASH

| Debits | Credits |
|---|---|
| Beginning inventory | Cash paid out |
| Cash received | Ending inventory |

3. ACCOUNTS RECEIVABLE

| Debits | Credits |
|---|---|
| Beginning inventory | Payments received on accounts |
| New accounts receivable | Ending inventory |

OR

INDIVIDUAL NAME

| Debits | Credits |
|---|---|

4. ACCOUNTS PAYABLE

| Debits | Credits |
|---|---|
| Debts paid | Beginning inventory of debts owed |
| Ending inventory of debts not paid | New debts incurred during the year |

OR

INDIVIDUAL NAME

| Debits | Credits |
|---|---|

In using this series of four T-accounts to record all the financial transactions of a farm business for the year, there are several basic rules to be observed. The beginning inventory and all increases for cash and accounts receivable should be entered on the debit side. For the beginner, this seems illogical since, at first thought, it would appear that a cash income should be a credit and not a debit. A cash income is a credit to the individual enterprise from which the earning came but is a debit to the cash account. As this system does not provide for different accounts for each individual enterprise, the cash income appears only as a debit to cash in the general cash account. A cash account or an account for receivables should be considered a "box" in which the cash is stored. When the cash comes in and is placed in the box, then the box is charged or debited with the responsibility of keeping the cash until it is needed. When cash is paid out, the money is removed from the box and the cash account is credited with the fact that the money has been taken out.

Since this organization of T-accounts is not a double-entry system, there should be only one entry if the item is cash and not credit or credit and not cash. If the item is partially cash and partially credit, then there should be an entry to cash for only that part which represents a cash expense or receipt and an entry to payables or receivables for the remainder.

An application of this system of records is briefly illustrated here.

| | |
|---|---|
| Beginning inventory: | |
| Cash on hand | $ 50.00 |
| I owe Barlow (account payable) | 152.00 |
| Stanley owes me (account receivable) | 600.00 |
| January 10: | |
| Barlow sells me feed for cash | 30.00 |
| Barlow buys 1 used tire from me for cash | 15.00 |
| Barlow hires me to plow his field on credit | 40.00 |
| Woodin sells me 1 calf on credit | 26.50 |
| January 20: | |
| Barlow pays me on account | 40.00 |
| Stanley pays me on account | 400.00 |
| I pay Woodin for calf | 26.50 |

The T-accounts summarizing these transactions are as follows:

1. Cash

| Debits | | Credits | |
|---|---|---|---|
| Beginning inventory | $ 50.00 | Jan. 10—feed purchased | $ 30.00 |
| Jan. 10—tire sold | 15.00 | Jan. 20—paid Woodin on account | 26.50 |
| Jan. 20—Stanley paid on account | 400.00 | | |
| Jan. 20—Barlow paid on account | 40.00 | Ending inventory | 448.50 |
| | $505.00 | | $505.00 |

2. Accounts Receivable

| Debits | | Credits | |
|---|---|---|---|
| Beginning inventory, due from Stanley | $600.00 | Jan. 20—Stanley paid on account | $400.00 |
| Jan. 10—due from Barlow for plowing | 40.00 | Jan. 20—Barlow paid on account | 40.00 |
| | | Ending inventory | 200.00 |
| | $640.00 | | $640.00 |

3. Accounts Payable

| Debits | | Credits | |
|---|---|---|---|
| Jan. 20—paid on debt of Woodin for calf | $ 26.50 | Beginning inventory | $152.00 |
| Ending inventory | 152.00 | Jan. 10—purchased calf from Woodin on credit | 26.50 |
| | $178.50 | | $178.50 |

In adapting this series of T-accounts to meet the requirements of a farmer who desires to accumulate facts about his business to the extent of inventories, cash expenses and receipts, and a record of payables and receivables, the usual inventory book should be used as the T-account for the inventory; actually, the inventory is a series of T-accounts for the different capital items. The typical cash account can be used as the T-account for cash, but it is preferable to set up the cash account in outline form as a true T-account, either classified or unclassified, in order to be able to keep it on the same basis as the payables and receivables. Finally, one T-account should be set up for accounts receivable and one for accounts payable; if large numbers of receivables or

payables are expected, a separate account for each individual debtor or creditor should be kept.

## Accrual Records

Some farm record books prepared for the purpose of collecting information about the operation of the farm business as a unit are designed to be used as accrual records rather than cash records of costs and returns. An accrual record of the farm business or any part of the farm business is a summary of the financial results for a certain period of time, usually the year or crop season, regardless of the type of transaction, whether cash, credit, or both. A strict accrual record will show receipts and expenses for the year's business but will not show cash income and expenses unless other accounts are added to the system. A cash record such as the cash account will show cash income and expenses during the year but will not show total expenses and receipts on an annual or crop season basis. Each approach has its advantages and disadvantages, but because of the relative simplicity of the cash account, it has a wider use on most farms. By adding T-account records of payables and receivables to the combined inventory and cash account records, essentially the same information will be collected as would have been gathered from the more complicated accrual record.

Over a period of years, the total costs, the returns, and the net returns from the farm business will tend to be the same, regardless of whether the record is kept on a cash or an accrual basis. In any one year, however, the final results are likely to be different. Producers of cash crops that may be grown in one year but stored and sold the following year; growers of nursery stock; and livestock producers who may sell the production of more than one year during a short period of time and then have little or no cash income for several years may find it desirable to keep their operating records on an accrual basis. Farmers who have a relatively constant cash income from year to year will find that the cash account will give essentially the same results as the accrual record and also will be much easier to keep. This is true especially if adequate records of receivables and payables and a detailed inventory record are kept.

An example of the difference in recording farm expenses and receipts on the cash and on the accrual basis is given.

| | Cash Basis | Accrual Basis |
|---|---|---|
| Farm receipts: | | |
| January | | |
| December milk check | $120.00 | $ — |
| Eggs sold for cash | 80.00 | 80.00 |
| Eggs sold on credit | — | 40.00 |
| Received from sale of potatoes grown last year | 100.00 | — |
| Milk produced in January but not paid for until February | — | 130.00 |
| Total receipts for the month | $300.00 | $250.00 |
| Farm expenses: | | |
| January | | |
| Feed bought for cash | $ 30.00 | $ 30.00 |
| Feed bought on credit | — | 40.00 |
| Paid last month's feed bill | 40.00 | — |
| Other cash expenses | 100.00 | 100.00 |
| Total expenses for the month | $170.00 | $170.00 |

## EXERCISE 13

1. Classify the farm receipts and farm expenses of Farm 19 according to the following outline:

| | Cash Basis | Accrual Basis |
|---|---|---|
| Expenses: | | |
| Feed for cattle | | |
| Feed for poultry | | |
| Other feed | | |
| Livestock purchased | | |
| Auto expense | | |
| Truck and tractor | | |
| Dairy expense | | |
| Crop expense | | |
| Equipment | | |
| Buildings | | |
| Labor | | |
| Miscellaneous | | |
| Total expenses | | |

| | Cash Basis | Accrual Basis |
|---|---|---|
| Receipts: | | |
| Egg sales | | |
| Milk sales | | |
| Livestock sold | | |
| Crop sales | | |
| Miscellaneous | | |
| Total receipts | | |

2. Based on the inventories and on these receipts and expenses, compute the labor income and labor earnings by each method.
3. Set up T-accounts for "cash," "accounts receivable," and "accounts payable," and record the beginning inventories, compute the totals of all transactions, and close the accounts.

## INVENTORIES, FARM 19

Table 1

| | Beginning of Year | Ending of Year |
|---|---|---|
| Assets: | | |
| Farm capital: | | |
| Land and buildings | $14,856.00 | $14,776.00 |
| Horses | 650.00 | 600.00 |
| Poultry | 220.00 | 448.00 |
| Cattle | 5,260.00 | 5,450.00 |
| Machinery and equipment | 5,417.08 | 4,641.00 |
| Feeds and supplies | 1,810.00 | 1,546.00 |
| Total farm capital | $28,213.08 | $27,461.00 |
| Non-farm capital: | | |
| Cash | $ 876.00 | $ 600.00 |
| Accounts receivable and prepaid expenses—farm | 444.40 | 927.00 |
| Accounts receivable—non-farm | 100.00 | 100.00 |
| Cash value of life insurance | 174.00 | 206.00 |
| Other personal property | 400.00 | 360.00 |
| Total non-farm capital | $ 1,994.40 | $ 2,193.00 |
| Total assets | $30,207.48 | $29,654.00 |
| Liabilities: | | |
| Accounts payable—farm | $ 214.90 | $ 307.60 |
| Chattel mortgage, PCA | 3,000.00 | 2,226.36 |
| Mortgage on real estate | 5,000.00 | 5,000.00 |
| Total liabilities | $ 8,214.90 | $ 7,533.98 |
| Net worth | $21,992.58 | $22,120.04 |

Table 2. Farm Expenses

| | Cash Farm Expenses * | | | Non-cash Farm Expenses † | |
|---|---|---|---|---|---|
| | For Last Year's Business | For This Year's Business | For Next Year's Business | For This Year's Business | For Next Year's Business |
| Feed for cattle | $ 90.08 | $1,260.20 | $ — | $ 90.00 | $ — |
| Feed for poultry | — | 348.00 | — | 40.00 | — |
| Other feed | — | 27.80 | — | — | — |
| Livestock bought | — | 80.00 | — | 36.00 | — |
| Auto expense | — | 70.00 | — | — | — |
| Truck and tractor | 64.00 | 406.00 | 32.00 | — | — |
| Dairy expense | — | 540.90 | — | — | — |
| Crop expense | — | 180.00 | 102.00 | — | — |
| Equipment | 14.00 | 462.00 | — | 20.00 | 121.60 |
| Buildings | — | 120.00 | — | — | — |
| Labor ‡ | 46.82 | 452.00 | — | — | — |
| Miscellaneous | — | 508.00 | — | — | — |
| Total | $214.90 | $4,454.90 | $134.00 | $186.00 | $121.60 |

* In addition to the cash farm expenses, the operator spent $1,285.40 in cash for payments on principal and interest on debts and $1,800.00 in cash for family living expenses.

† All of these items are materials purchased on credit and not paid for before January 1, 1948.

‡ In addition to cash labor costs, the estimated value of unpaid family labor amounted to $400.

Table 3. Farm Receipts

| | Cash Farm Receipts | | Non-cash Farm Receipts * | |
|---|---|---|---|---|
| | For Last Year's Business | For This Year's Business | For Last Year's Business | For This Year's Business |
| Egg sales | $ 22.40 | $ 326.80 | $ — | $ 42.00 |
| Milk sales | 422.00 | 5,634.00 | — | 530.00 |
| Livestock sales | — | 514.00 | — | — |
| Crop sales | — | 92.00 | 35.00 | 144.00 |
| Miscellaneous | — | 802.00 | — | 42.00 |
| Total | $444.40 | $7,368.80 | $35.00 | $758.00 |

* All of these items are sales made on account which were not paid for before January 1 of the current year.

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*CHAPTER* 14

# *Single Enterprise Accounts*

The farm records studied thus far are the inventory, complete cash accounts, farm cash accounts, the combined inventory and cash account record, accrual accounts, and T-accounts for cash, receivables, and payables. These records furnish much valuable information about the farm business as a unit but do not supply sufficient data to determine the profit or loss on the different farm enterprises or on any one farm enterprise. The next step, moving from the simplest to the more complex record systems, is a system of farm records which will furnish information about a farmer's net worth and changes in net worth, a measure of his profit and losses on the farm as a whole for the year, a simple division of the direct expenses and receipts according to the enterprises being studied in the analysis of his farming operations, a record of payables and receivables, and, in addition, a detailed record of the costs, returns, and net profit on his most important enterprise.

The simplest system which will meet these needs includes an inventory record, a record of cash receipts and expenses on a classified basis, a T-account record of receivables and payables, and a single enterprise account on the most important farm enterprise. Many farmers do not have the ability and inclination to keep detailed cost account records of each and every enterprise on the farm but do desire a reliable record of the results for the major enterprise on the farm. On specialized farms where one enterprise provides most of the cash income, a single enterprise record of this project, together with the complete records listed previously, will supply most of the basic information obtained from the more complex complete farm cost accounts.

## Problems in Keeping and Using Enterprise Accounts

1. *Difficulties in Using Single Enterprise Accounts.* The fundamental purpose of keeping farm records is to obtain facts which will aid the farmer to plan and install improvements in the farm business and thereby make greater profits. The typical farm maintains many different enterprises, and the major objective should be to make this complete farm as a unit return the greatest possible total profit without obtaining relatively high efficiency from one enterprise while neglecting others. In the long run, it is the total return from all enterprises and not the return from any one enterprise which determines the success or failure of a farming operation. Because of this fact, the most important farm records are those which measure the results of the operation of the complete farm as a unit and not the record of any special farm enterprise. Thus, single enterprise accounts should be added to the system of farm records only after adequate records have been kept of the complete farm as a unit. The brief but complete records of the farm as a whole which have been discussed heretofore may be compared to a brief studying with the naked eye of a bushel of potatoes in order to determine the qualities and defects of the unit as a whole. A single enterprise account may be compared to a microscopic examination of one potato selected from the bushel, because it appears to represent the characteristics most common in the bushel as a whole, in order to find out in more detail the minor differences and variations in quality and defects. The appraisal of the bushel as a whole comes first and is most important; the microscopic examination of the most important potato in the bushel is next, if desirable and needed, and a microscopic examination of each and every potato in the bushel is the final step if the most complete examination is made. This complete study of every part of the farm business is obtained from farm cost account records of every enterprise and all parts of the farm business.

Keeping an enterprise account or a series of enterprise accounts on segments of the farm business is likely to be misleading if not used in connection with records of the farm business as a whole. The fact that a certain enterprise on the farm does not

show a profit at the end of the year is not sufficient reason for dropping it from the farming system. The enterprise may contribute to some other activity on the farm or may utilize materials, labor, or equipment which otherwise would be completely idle. Therefore it would be preferable to sustain a small loss on the particular enterprise rather than a larger loss on the business as a unit because of the lack of utilization of these otherwise idle resources. The fact that an enterprise does show a profit year after year is not in itself a sufficient reason for maintaining it in the farming system. The enterprise may conflict with other enterprises in demands for labor, land, and capital which would make even greater net returns. Thus, single enterprise accounts should be added to the system of farm records only after a minimum of other records of the farm as a unit have been kept, including the combined inventory and cash account, and should be used in connection with the analysis of the business as a whole.

2. *Difficulties in Keeping the Record.* The most important and difficult problem in keeping an enterprise account is the allocation of the indirect expenses to an enterprise or group of enterprises. The indirect expenses, which are costs for more than one enterprise, make up a large part of the total farm expenses on most farms. The expenses of a typical family-type dairy and cash-crops farm for a certain year were:

| | |
|---|---|
| Direct expenses chargeable to the different enterprises | $2,336 |
| Indirect expenses: | |
| Farm share of auto costs | 41 |
| Truck and tractor costs | 145 |
| Machinery and equipment costs | 315 |
| Building and fencing costs | 111 |
| Hired labor | 416 |
| Unpaid family labor | 94 |
| Board for hired labor | 49 |
| Miscellaneous farm expenses | 341 |
| Total indirect expenses | $1,512 |
| Total farm expenses | $3,848 |

Indirect expenses in this case made up about 40 per cent of the total farm expenses. If a charge for the value of the operator's

labor and the interest on the capital invested in the farm business were added to the indirect costs, these items would comprise more than one-half of all expenses.

Before any reliable record can be kept of the costs and returns for any single enterprise or group of enterprises, some method or series of methods must be established for allocating these indirect costs to the different enterprises. This problem for a farm is much more difficult than for most business operations because the typical farm has a larger number of individual enterprises within a smaller total business unit than non-agricultural businesses usually have.

If all farming operations were on a very specialized scale, with each farmer producing only one major product, or if all farmers operated large farms with sufficient funds so that each enterprise could be established as separate departments under different management, the ordinary commercial accounting or bookkeeping approach could be used. The common commercial accounting methods would apply if the owner of a very large farm had it organized so that the dairy unit were located apart from the other farm enterprises with a man in charge of the cows and special dairy equipment; and if a separate beef cattle unit were maintained with a herdsman in charge; a feed-crops unit operated elsewhere with another manager; and a cash-crops unit with still another manager in a different location.

When the dairyman used some feed produced on the feed-crops unit, the dairy enterprise would be charged with the market value of this feed and the feed-crops unit credited with the same amount. If barnyard manure were used on land planted to cash crops, the dairy unit would be credited with the value of this manure and the cash-crops unit charged with a like amount. If steers were sold by the beef cattle herdsman for cash, the beef cattle unit would receive credit for this sale and the cash account would be charged with the amount deposited. When the herdsman wrote a check to buy feed for the beef cattle, his unit would be charged with the expense, and the cash account credited for a like amount. Every transaction would affect two accounts. The account that supplied the item would be credited and the account that used the item would be debited.

This is the exact procedure used in double-entry bookkeeping. Since most farms, however, cannot be divided into clear-cut departments, some arbitrary allocations are necessary even if the records are kept according to usual commercial accounting methods. Also, most farmers do not have the time or the training to keep such records, and a less complicated kind of record must be used in collecting data on costs and returns for individual enterprises. Such relatively simple enterprise records are available or can be devised to fit the needs of any individual producer if well-established, reasonable methods are used to allocate the indirect cost items.

## Characteristic Cost Items for a Crop Account

The characteristic cost items for a typical crop account and suggestions for what should be included in each cost item follow:

1. *Seed.* The first cost in the production of a crop is the seed expense. If this is a regular cash purchase, the expense listed is the amount paid for the seed plus any transportation and seed treatment charges. If the seed used is obtained from products grown on the farm and stored, the enterprise should be charged with the value of this seed at the time it was planted. The most reasonable valuation for home-produced seed is the sale value of the seed minus the costs of marketing. Some crops, however, do not have an annual seed charge since a crop may be harvested over a period of several years from one planting. Such crops include sugar cane, alfalfa, and other kinds of hay. Other crops are produced from plants rather than seed and may be harvested over a period of two to twenty years or more. Such crops include tree fruits and nuts, strawberries, and comparable products. These products must receive special treatment in accurate enterprise records. The usual procedure for hay seedings, for instance, is to estimate the number of years the seeding will last, based on experience on the farm, and to charge to any one year's record a proportionate cost only. If the seeding is to last four years, then one-fourth of the seed and costs of planting are charged to each year. Other crops produce high yields in the first crop year after planting and gradually decline in the years following. This is true for sugar cane, for which the proportionate charges of the

total planting costs are usually based on a 60 per cent rate for the first year, 30 per cent for the second year, and 10 per cent for the third year. Local experience with each crop should be the basis for making these estimates. For fruit and nut crops, such as apples or pecans, the preferable treatment is to determine the total costs of producing the orchard up to bearing age, including labor, materials, and land costs, and allocate these total costs each year on a percentage basis according to the length of time the orchard is expected to remain in productive use.

2. *Fertilizer.* If the crop is a typical cash crop or clean cultivated feed crop, such as corn for grain or silage, and commercial fertilizer is used, the charge to the enterprise is the total cost of all fertilizer applied to the crop. Some types of fertilizer, however, become available slowly and are used up over a period of years. The effect of basic slag, for instance, may be observed within five years after the original application. In such cases, only the proportionate part of the fertilizer which is made available to the current crop should be charged to the enterprise. In other instances, although no fertilizer was applied directly to the land for a particular crop, fertilizer applications in previous years are available for the use of the crop and should be included in the fertilizer expenses of the enterprise. This is true especially for applications of manure. In the northern states where cool winters retard erosion, manure costs usually are allocated on the basis of 40 per cent of all expenses for the first crop, 30 per cent the second year, 20 per cent the third year, and 10 per cent the final year. In the southern states where rainfall is heavier and erosion more severe, a proportionate charge for manure of 60 per cent the first year and 40 per cent the second year is more generally used.

3. *Use of Land.* Land costs make up an important cost element in the production of a crop but frequently are omitted in the list of expenses for a crop account. If the land is rented for cash, the land charge is the cash rent paid; if it is rented on shares, the land charge is the value of the produce paid as land rent. On the usual owner-operated farm, however, the problem is more difficult. Several solutions are possible, each with its advantages and disadvantages. The simplest answer is to charge the crop with the amount it would cost to rent similar land in the

immediate neighborhood. In many regions, land is not usually rented and rental rates are not available. Where this is the situation, the best approach is to compute the total land costs on the farm for interest, taxes, fencing, draining, terracing, and other land costs; determine the percentage ratio of the value of the land used for the particular crop enterprise to the total value of all land on the farm; and apply this percentage ratio to the total land costs to obtain the land charge for this enterprise. Another and less accurate but easier method is to estimate the value of the land used for the crop and charge about 7 per cent of this value as the yearly rental. The 7 per cent charge is assumed to be the average costs of maintaining land, including charges for interest on the investment, taxes, fencing, and draining.

4. *Use of Buildings.* To most enterprises farm building costs make up one of the more important, indirect items of expense and are difficult to allocate directly to the different enterprises. The most common use any crop enterprise makes of a farm building is the storing of the crop between the time it is harvested and sold. If the building is rented for the sole purpose of storing the one crop, the total charge to the enterprise is the rental cost. If it is rented for more than one crop, the total cost should be allocated to the different crops according to proportionate use by each enterprise. On the owner-operated farm, building costs can be allocated most accurately by determining first the total costs of maintaining the building or buildings for the year, including charges for interest on the investment, depreciation, taxes, insurance, and repairs; then computing the proportionate use of the total building space by each enterprise; and applying this percentage rate to the total costs to obtain the building charge for an individual crop. Long-time average farm building costs are indicated to be annually about 4 per cent of the value of the building for depreciation and repairs, 5 per cent for interest on investment, 1.5 per cent for taxes, and 0.5 per cent for insurance, or a total of 11 per cent of the total value for all costs. Thus, a simpler but less accurate way to obtain total building costs for the year is to allow 10 or 11 per cent of the value of the building.

5. *Use of Tractor and Truck.* Any effective enterprise account must include a physical record showing hours of operation of the tractor and other large items of equipment and the annual mile-

age on the truck or the farm automobile if used on the enterprise. With these physical records, reasonable charges can be made to the crop enterprise for the use of these important equipment items. The method most frequently used is to apply average cost rates to the hours or miles and consider the total thus determined as the charge to the enterprise. Long-time average costs for farm truck operations are six to seven cents per mile and for farm automobiles, about five cents per mile. Tractor costs vary from forty to eighty cents per hour, depending on the size of the tractor and the kind of use. A more accurate but more complicated way to determine these costs is to keep a detailed cost record of the tractor, truck, and automobile, a detailed physical record of the use of these equipment items on all enterprises throughout the year, and then charge each enterprise according to the proportion of total use.

6. *Use of Other Machinery and Equipment.* In addition to the amounts for major pieces of machinery, crop enterprise costs include charges for the many small equipment items on the farm, such as plows, harrows, hoes, planters, spray rigs, and the like. As with other equipment, the most accurate method to determine the charges to a given enterprise is to keep an accurate record of the costs of each individual item and to charge the total costs of each according to the relative use on the enterprise. In single enterprise records, however, this practice is impossible because of the large amount of accounting work involved. The best substitute is to compute the total costs for all such machinery for the year as determined from the inventory changes and cash costs and to allocate these total costs on some reasonable basis to the different enterprises. If the farm is strictly a crop farm and all crops require a similar amount of labor and equipment use, the per acre equipment cost applied to each enterprise is satisfactory. If the farm is a diversified one including several crop enterprises of varying intensity as well as livestock enterprises, a more accurate method is to determine the total productive man work units on the farm, compute the equipment cost per productive man work unit, and apply this rate to the work units on the individual enterprise to obtain the equipment charge to the crop. Average equipment costs as a percentage of the investment in equipment usually amount to about 10 per cent for depreciation,

6 per cent for repairs, 5 per cent for interest, 3 per cent for housing, and 1 per cent for other costs, or a total of 25 per cent of the average investment in miscellaneous farm equipment. Thus, a simpler but less accurate way to obtain total equipment costs on the entire farm for the year is to allow about 25 per cent of the inventory value of the equipment on the farm.

7. *Workstock.* One of the most difficult of all the indirect cost items to allocate to a single enterprise account are the charges for the use of workstock. The most accurate way to determine the costs of workstock on a single enterprise is to keep two different kinds of records: first, a workstock labor record in which is recorded the hours of workstock labor for each and every enterprise on the farm to be used in determining the proportion of workstock costs to be charged to a given enterprise and, second, a detailed cost record on the workstock maintained on the farm. This cost record should include inventory changes or depreciation, all direct costs for feed, bedding, veterinary treatment and medicine, harness maintenance, and shoeing, and all indirect expenses for use of pasture, buildings, fences, and interest on the investment in workstock. The percentage cost of the workstock for a given enterprise applied to the total costs will result in the most accurate charge for workstock service to the enterprise. Many farmers, however, will not desire to keep such detailed records in order to determine workstock charges to an individual enterprise. In such instances, average costs per hour of use in the region or state applied to the hours of workstock use on the enterprise will provide a fairly accurate basis for establishing these costs. Although workstock costs vary from area to area, depending on the relative price of feed, and from farm to farm in a given area, depending on the amount of use, average costs in the United States as a whole varied from 10 to 18 cents per hour in the prewar years of 1935–1940, and from 20 to 30 cents in the higher cost period of 1940–1945.

8. *Man Labor.* If all man labor costs to an enterprise are the cash costs for hired labor, the total charges are the expenses for this hired labor. If all labor on the enterprise is done by the regular hired help who are paid on a weekly or monthly basis to do all sorts of work on the farm, or if part or all of the work is done by the farm operator or unpaid family labor, the problem

is more difficult. For best results, two different labor records should be kept; one of the hours or days of work performed by each member of the working force, whether paid or unpaid, on each enterprise or part of the farm business; and another to list the expenses for hired labor and estimate the legitimate costs for unpaid labor. In establishing unpaid labor charges, it is preferable to base these costs on average rates paid in the area to hired labor for doing similar jobs. Once the total labor charges and the total working time of each individual are obtained, the average cost per hour and per day for each individual can be computed and this rate applied to the amount of time each worked on the enterprise. When conditions are unfavorable to the accumulation of this detailed labor cost information, the average hired labor rate paid in the area for all farm labor should be applied to the hours worked on the enterprise by all workers. During the prewar period, 1935–1940, farm wage rates paid in the United States as a whole varied from 20 to 40 cents per hour; in the higher cost period, 1940–1945, wage rates varied from 30 to 80 cents per hour. Because farm wage rates differ so widely from area to area, even in the same year, and from farm to farm, depending on the kind of work done, it is preferable to use local wage rates paid for similar work when establishing average costs for man labor on a given enterprise.

9. *Interest.* There are two kinds of interest costs which should be included in the charges to a single enterprise account. Interest on long-time capital items, such as land, buildings, tractors, and other machinery, should be included at the average interest rate paid in the region for financing long-time fixed assets. For the most part, this interest cost is included as part of the total charges for the specific item as used by the enterprise. Thus, the interest cost for land is included as part of the charges for use of land, and the interest cost for equipment is part of the total costs for equipment use. If this interest cost has not been included as part of the expenses for each item, it should be computed for the total investment used for the enterprise and listed as a separate item. The other kind of interest cost involves the short-time interest charges for the use of the working-capital items invested in the enterprise. These items include the investment in fertilizer, seed, and labor. Since most of these materials are actually invested

and in use by the enterprise for less than one year in a typical crop account, the interest rates employed should be the short-time production credit rates prevailing in the area. In recent years, 5 per cent has been the prevailing interest rate for long-time loans and 6 per cent for short-time production credit loans.

10. *Other Growing Costs.* Most crops have certain special costs which must be included to complete the picture of total growing expenses. There are spraying costs for potatoes, dusting costs for cotton, inspection costs in producing certified grain seed, seed treatment charges for many crops, and the like. In the organization of any single enterprise account for a particular crop, proper space should be provided for the inclusion of these miscellaneous expenses.

11. *Harvesting Costs.* Although harvesting costs include man labor and workstock charges, equipment use items, and cash costs which could be logically included in miscellaneous expenses, it is desirable for purposes of analysis and ease in keeping the record to include all harvesting costs in one group. These charges should consist of all the usual and special labor costs; special equipment such as potato diggers or combines; workstock costs in harvesting operations; and other similar items. Because of the fact that most crops are marketed immediately after being harvested, the interest cost on the money invested in the different expense items for harvesting ordinarily is not considered as legitimate expense for the crop. If the crop is stored and sold at a later date, interest cost on the harvesting charges and on the value of the crop in storage should be included but more logically is considered a part of the marketing expenses.

12. *Marketing Costs.* All marketing or selling costs should be listed as one group of expenses to simplify the keeping of the record and aid in the organization of the results for analysis purposes. The usual marketing costs for a crop include containers, inspection fees, hired transportation, storage expenses, telephone and telegraph fees incurred in selling the crop, and special labor charges. Many farmers eliminate the necessity of including most of the marketing charges in the single enterprise record by recording as receipts the net value of the product after the marketing charges have been deducted. This procedure will give the same net monetary result but provides a record which

is of less value for analysis purposes, as it does not show the complete picture.

13. *Miscellaneous Costs.* The miscellaneous charges to a crop enterprise include all small items of expense not covered by the previously listed twelve major expense groups. Examples of these are cover crop charges and advertising. Also, although each of the major cost items is recorded carefully throughout the year for each enterprise on the farm, the total expenses from the different enterprise records will not add up to the total expenses for the entire farm for the year. General farm expenses like drainage, fencing, special fees and dues to farm organizations, costs for magazines and books purchased for aid in operating the farm, and other similar items are almost impossible to allocate directly to the different enterprises unless complete double-entry farm cost account records are kept. For the single enterprise account, the most conservative procedure to use in taking care of these expenses is to compute the total costs previously recorded and add to the miscellaneous cost group an amount equivalent to 5 to 10 per cent of the total recorded expenses. On specialized farms producing no more than two or three major products, the cost items which are impossible to allocate usually amount to about 5 per cent of total costs; but on diversified farms with many enterprises, the proportion often amounts to at least 10 per cent of all farm expenses.

## Characteristic Income Items for a Crop Account

The characteristic income items for a typical crop account, and suggestions as to what should be included in each income item, are as follows:

1. *Crop Sales.* All enterprise accounts should be kept on the accrual basis. In the analysis of a single enterprise account, the fact that certain expenses were not paid for in cash or that the income from part of the crop sales has not been received should not distort the record, as the object of the single enterprise account is to provide facts which will help to improve the efficiency of this major enterprise. Thus, all crop sales should be listed in the receipts, regardless of whether these crops were sold for cash or on credit, so that the enterprise is given full credit for all income produced.

2. *Crops Used on the Farm.* The value of all commodities produced by the crop enterprise and used on the farm comprises the second most important item of receipt for many crop enterprises. Such items include crops produced for feed, such as corn and hay; crops and crop by-products used on the farm for purposes other than feed, such as grain straw for bedding and cottonseed for fertilizer. The most difficult problem with these receipt items is to establish a reasonable value. The best approach is to use the market or sale value of the item at the time it was utilized. In determining this amount, care should be taken that the true market value at the farm is used and not the price of the product after it has been transported, baled, and processed. Straw, for instance, may cost $20 a ton in bales at the nearest feed dealer, but loose straw in the stack on the farm is worth much less than this amount; actually, the true value is the price for which the producer could sell the straw where it stands, without baling, transporting, storing, and selling costs being added.

3. *Crops Consumed by the Farm Family.* Another important item of income from the typical crop account is the value of the products raised and consumed by the farm family during the year. The values decided upon should be the market values at the farm, established in the same way as for crops used for feed. Omission of receipts which should be credited to a crop enterprise frequently occurs because the value of these products is not established. In addition to those crops actually consumed by the farm family, as well as outright gifts to relatives and friends, the products given to the hired labor as part of their pay should be considered as receipts to the enterprise and part of the total expense to labor. The crop enterprise should be credited with all products having a salable value regardless of the final use made of them.

4. *Value of All Crops Stored.* Another item of receipt for the crop account should be the value of all products grown and stored either off or on the farm for later sale or use as feed, food, seed, or other purposes. These products should be valued at the market or sale price at the farm. Often, these receipt items are recorded and valued in the ending inventory for the entire farm and can be transferred to the individual enterprise accounts.

5. *Miscellaneous Receipts.* The final group of receipt items should include all other income from the enterprise not previously

recorded. Some crops have unusual receipt items such as the value of seedings at the end of the year or the value of manure or commercial fertilizer applied to the crop but unused and available for succeeding crops.

## Record Forms for Crop Accounts

A single enterprise crop account can be developed from four relatively simple schedules on which all the information can be recorded. These schedules should include a record of the man labor and workstock and equipment use by days; a financial record of all cash expenses and receipts and all non-cash costs and returns, with the quantities listed for each item; a record of the costs and use of equipment for allocating these indirect cost items to the enterprise; and a final summary record of all expenses, receipts, and the resulting net income. Examples of these four schedules follow.

Some states publish brief outline record books for help in keeping single enterprise crop accounts. An excellent example of this sort of book is *How to Keep an Account with a Crop,* published by the New York State College of Agriculture at Cornell Uni-

### 1. RECORD OF LABOR ON THE ENTERPRISE

| Date | Kind of Work | Type of Labor | Acres Covered | Man Hours | Horse Hours | Tractor Hours | Truck Miles |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

(Where two or more different kinds of labor, such as operator labor and hired labor, are used the same day, this work should be listed separately. All entries should be made daily.)

## 2. RECORD OF RECEIPTS AND EXPENSES

| Date | Item of Expense | Cost | Date | Item of Receipt | Value |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

(Separate pages are preferable for cash receipts and expenses and for non-cash costs and returns. Enter daily all expenses and receipts, recording quantity as well as costs.)

## 3. EQUIPMENT USE FOR THE ENTERPRISE

| Item | Number | Average Value | Depreciation Rate | Total Depreciation | Per Cent Used by the Crop | Depreciation Cost to the Crop | Investment to Crop |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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(This schedule should be used to list separately all the large major items of equipment such as tractor plows, potato diggers, and the like. Also, one final entry should be made summarizing the numerous small equipment items such as hoes, small plows, and harrows.)

## 4. SUMMARY OF COSTS AND RETURNS

Crop____________________ Acres__________

| Item | Totals | | Average per Acre | |
|---|---|---|---|---|
| | Amount | Value | Amount | Value |
| Costs: | | | | |
| Seed | | | | |
| Fertilizer | | | | |
| Use of land | | | | |
| Use of tractor | | | | |
| Use of truck | | | | |
| Use of other equipment | | | | |
| Workstock | | | | |
| Man labor | | | | |
| Unpaid | | | | |
| Hired | | | | |
| Interest | | | | |
| Other growing | | | | |
| Total growing | XX | | XX | |
| Harvesting | | | | |
| Marketing | | | | |
| Miscellaneous | | | | |
| Total costs | XX | | XX | |
| Returns: | | | | |
| Crop sales | | | | |
| Crops used | | | | |
| Crops consumed | | | | |
| Crops stored | | | | |
| Miscellaneous | | | | |
| Total returns | XX | | XX | |
| Net returns | XX | | XX | |

versity, Ithaca. Record books of this sort are usually available, free upon request, to residents of the state where the book is published and at a very small charge to residents of other states. Other states publish detailed enterprise account books for specific crops. An example of this is the *Citrus Grove Enterprise Account*, published by the Florida State College of Agriculture at Gainesville.

## EXERCISE 14

1. Prepare a set of four forms, similar to the ones illustrated in this chapter, for the recording of receipts and expenses of a single enterprise cotton account.
2. Using the record of results of the cotton enterprise of Farm 20 which is presented with this chapter, transfer all information to the proper places in the schedules prepared in item 1 of this exercise.
3. Compute all totals, determine the net profit from the cotton enterprise, and compute the costs and returns per acre and per hundred pounds of lint cotton produced.

## COTTON ENTERPRISE, FARM 20

### Labor Requirements

1. *Cutting stalks:* Usually done during the month of February, the date depending upon the weather. Stalks are sometimes cut by hand, sometimes with a disc, sometimes with a stalk cutter. Usually cover about 6 acres per day with a disc or stalk cutter.
   Man labor, 10 hr.; mule labor, 20 hr.
2. *Fertilizing:* Usually done from March 15 to April 10. Usually fertilize about 6 acres per day using fertilizer distributor.
   Man labor, 10 hr.; mule labor, 10 hr.
3. *Bedding:* March 15–April 10 usual time. Times over, 2. Acres per day, 3.
   Man labor, 20 hr.; mule labor, 20 hr.
4. *Running out middles:* March 20–April 15. Times over, 1. Acres per day, 6.
   Man labor, 10 hr.; mule labor, 10 hr.
5. *Harrowing:* April 1–15. Acres per day, 6.
   Man labor, 10 hr.; mule labor, 10 hr.
6. *Planting:* April 1–20. Acres per day, 6.
   Man labor, 10 hr.; mule labor, 10 hr.
7. *Side harrowing:* April 15–May 5. Times over, 2. Acres per day, 3.
   Man labor, 20 hr.; mule labor, 20 hr.
8. *Chopping or scraping:* April 25–May 15. Acres per day, 0.6.
   Man labor, 100 hr.; mule labor, 0.

9. *Running around:* May 1–30. Times over, 2. Acres per day, 3. Usually done with sweep, sometimes done with side harrows, turning plows, cultivators.
   Man labor, 20 hr.; mule labor, 20 hr.
10. *Sweeping middles:* May 10–30. Times over, 1. Acres per day, 6. Usually done with sweep.
   Man labor, 10 hr.; mule labor, 10 hr.
11. *Running around:* May 15–June 10. Times over, 2. Acres per day, 3. Usually done with sweep or side harrow.
   Man labor, 20 hr.; mule labor, 20 hr.
12. *Sweeping middles:* May 15–June 15. Times over, 1. Acres per day, 6. Usually done with sweep, sometimes done with spring tooth harrow.
   Man labor, 10 hr.; mule labor, 10 hr.
13. *Hoeing:* June 1–20. Acres per day, 1.
   Man labor, 60 hr.; mule labor, 0.
14. *Running around:* June 1–30. Times over, 2. Acres per day, 3. Usually done with sweep.
   Man labor, 20 hr.; mule labor, 20 hr.
15. *Sweeping middles:* June 5–30. Times over, 1. Acres per day, 6. Usually done with sweep.
   Man labor, 10 hr.; mule labor, 10 hr.
16. *Picking:* August 1–September 15. Pounds of seed cotton per man per day, 150. Ranges from 100–200 pounds per man. Family picked 1,500 lb. seed cotton, or 10 days man labor. Operator picked 2,400 lb. seed cotton, or 16 days man labor. Hired labor picked 624 lb. seed cotton, or 4.2 days man labor.
   Man labor, 302 hr.; mule labor, 0.
17. *Hauling to gin:* Depends on distance and whether hauled by mules or truck; some farmers hire cotton hauled @ 50 cents per bale, some @ $1 per bale, again depending on distance.

### Cotton Equipment

| Item | Average Value | Depreciation Rate, Per Cent | Per Cent Used for Cotton |
|---|---|---|---|
| Wagon | $100.00 | 5 | 50 |
| Stalk cutter | 21.00 | 10 | 75 |
| Disc | 60.00 | 10 | 50 |
| Fertilizer distributor | 21.00 | 15 | 80 |
| Middle buster | 21.00 | 10 | 50 |
| Turning plow | 20.00 | 10 | 50 |
| Georgia stock | 5.00 | 8 | 50 |
| Gee whiz | 4.00 | 10 | 50 |
| Section harrow | 16.00 | 8 | 50 |
| Combination planter | 31.00 | 20 | 75 |
| Work gears | 30.00 | 15 | 75 |
| Miscellaneous small tools | 40.00 | 10 | 50 |

### Land and Buildings

Cropland $60 per acre—6 acres.
Barn $148—75 per cent to cotton enterprise.
Other buildings and improvements $86—75 per cent to cotton enterprise.

### Expenses

March
1 Cottonseed 100 lb. @ $6 per cwt.
Requires about 30 lb. cottonseed to plant an acre of cotton. Bought 100 lb., used approximately 100 lb. of own seed @ $6 per cwt.
1 Fertilizer—1,800 lb. of 4-8-4—300 lb. per acre @ $56 per ton.
October
1 Ginning 50¢ per cwt. seed cotton—total $22.62.
1 Picking $1.40 per cwt. seed cotton—624 lb.—total $8.74.
1 Bagging and ties $2.50 per bale × 4 bales—$10.
1 Hauling $2 per bale × 4 bales—total $8.
1 Labor—40¢ per hr. prevailing rate in the area.
1 Mule work—average cost of 24¢ per hr. in the area.

### Receipts

October
15 6 acres cotton—yield 290 lb. per acre—total production 1,740 lb.—sold at 20¢ per lb.—total value $348. None was used by family.
15 464 lb. seed per acre—total production 2,784 lb.; 120 lb. kept for farm use for seed, 2,664 lb. sold @ $50 per ton or 2½¢ per lb.—total value sold $66.60.
December
1 Price adjustment 3.2¢ per lb.—total $55.68.
1 Conservation payments—total $62.64.

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CHAPTER 15

# Enterprise Accounts (Continued)

## Characteristic Cost Items for a Livestock Account

The characteristic cost items for a typical livestock account, and suggestions as to the manner in which each cost item should be determined, are as follows:

1. *Beginning Inventory.* Livestock accounts differ from the typical crop account in that usually there is a beginning inventory of breeding or producing animals which forms the basis of the productive enterprise. The best way to handle this beginning inventory of livestock on hand is to include the total number and value of the animals in a given livestock enterprise as the first expense to the enterprise account. In most instances, this beginning inventory value is offset by a credit or the complete ending inventory value at the end of the year, but by listing the beginning inventory as an expense and the ending inventory as a receipt, the complete picture of the enterprise for the year can be shown. In some records, the net difference between the beginning and ending inventory is computed and added to the list of the expenses at the end of the year and both inventories omitted from the enterprise record. This method is somewhat simpler to adjust for inventory changes but has the disadvantage of not showing clearly the physical changes which occurred in the enterprise; it results in a less accurate analysis of the record. In addition, most livestock enterprises are continuous operations which do not change with the seasons as many crop enterprises do.

Inventories of feeds and supplies are available at the beginning of the year and should be listed among the first expenses charged to the livestock enterprise. If all these feed and supply items

are not used during the year or are used by other enterprises, proportionate credit should be given to the first enterprise for these quantities at the end of the year. When feeds or supplies are purchased for more than one enterprise, it is preferable to keep a separate feed and supplies account, crediting this account and charging the individual enterprises as the materials are used.

2. *Feeds and Supplies Purchased.* All feeds and supplies, including roughage, grain, minerals, salt, bedding, and other similar items purchased during the year, should be included as charges to the enterprise. Where feeds and supplies are purchased for several different livestock enterprises, only that part used by the one enterprise being studied should be included.

3. *Feed Produced on the Farm.* Proper charges to the livestock enterprise should be made for all feed and bedding produced on the farm and used by the enterprise during the year. These items include grain, hay, silage, straw, fodder, skim milk, cottonseed, beet pulp, and other similar materials. Such feed products usually make up a large part of the total costs of many livestock enterprises and, if omitted, will cause the enterprise record to show a false return at the end of the year. In establishing values for these products, the market value at the farm or the market value at the nearest place of marketing less the costs of selling the product should be used. For some products, such as silage, market values are not determined easily; to solve this problem the best method is to charge the product to the enterprise at the cost of producing it. This requires still more records, however, and may not be possible. For silage, the usual rule is that 3 pounds of corn silage is the equivalent of 1 pound of average legume hay; value each 3 tons of silage at the local price of 1 ton of average hay.

4. *Livestock Purchases and Additions.* All purchases of livestock should be listed as expenses as they occur. In addition, the market value of all additions to the enterprise from some other farm enterprise should be included as expenses. Such items as pullets added to the hen account during the year or heifers freshening for the first time and added to the dairy cattle account are just as much an expense to the specific enterprise as the purchase of these same items. Thus, if an account is being kept of the milking herd separate from the production of heifers for

replacements, every time a new heifer is transferred from the calf shed to the dairy barn as a milking cow, the dairy enterprise should be charged with this animal at the value of the animal at the time of the transfer. If another account is being kept of the heifer enterprise, this account should be credited with a like amount.

5. *Use of Pasture.* Pasture costs to a livestock enterprise should be determined in the same way as land costs for a crop enterprise. If rented, the cash rental costs should be included, but if on owner-operated land, the rental value, including costs for interest, taxes, fencing, drainage, fertilizing, liming, and the like, should be computed. On many farms, hay land or other cropland is often pastured part of the year. When this occurs, the livestock enterprise should be charged with part of the costs of this land but not all the costs for the year. There is no best method for making this allocation, as it depends on the relative importance of the crop as compared with the livestock enterprise and the use made by each. The number of days of use by each enterprise is employed as the basis in some cases; but in others, it is not satisfactory because the land is utilized for crops during the important part of the year when climatic conditions are most favorable and for pasture in that part of the year when crops cannot be grown. Also, pastures often are used by more than one class of livestock. In such instances, a proportionate rate must be established, based on the number of days of grazing by each enterprise and the animal units for each.

6. *Use of Buildings.* Building costs ordinarily comprise a more important item of expense for a livestock enterprise than for a crop enterprise. For a crop enterprise, building costs can be most accurately allocated by determining first the total expenses for maintaining the buildings for the year, including charges for interest on the investment in buildings, depreciation, taxes, repairs, insurance, and other costs, then computing the proportionate use of the total building to be charged to each livestock enterprise, and finally applying this percentage rate to the total cost to determine the building expense to a single enterprise. In this approach, the major difficulty is in estimating the proportionate use. Square feet of space allotted to each is the measure

sometimes used; this is of value for some types of buildings but is questionable for others where certain space, such as the ground floor, is more valuable and more costly than the space in the loft. The best rule is the good judgment of the individual farmer, if made with the realization that the allocation cannot be completely accurate but can be reasonable if care is taken to consider all the factors involved on his particular farm.

7. *Use of Equipment and Machinery.* Certain large items of equipment, such as milking machines and feed conveyors, are easily allocated directly to the individual livestock enterprise. Other equipment items which are used for a number of enterprises and sometimes for both a livestock and crop enterprise are difficult to allocate. The same kind of procedure should be used with these items as with a crop enterprise; total costs for the miscellaneous equipment items should be determined and these costs allocated according to relative use. One way to establish this distribution factor is to compute the proportionate animal units or productive man work units for each of the livestock enterprises. In addition, there are often truck, tractor, and even farm automobile charges to livestock enterprises. These should be allocated to the livestock enterprise by determining unit costs per mile and per hour from the producer's own records or from average rates for the area; these rates should then be applied to the physical quantities used on the enterprise.

8. *Man Labor and Horse Work.* As with crop enterprises, two different labor records are needed to have the most accurate basis for distributing all labor charges equally to enterprises or charging any one enterprise with the proper share of the total labor expense. For the livestock enterprise, a daily record of the hours of labor spent on the enterprise by each member of the farm working force is needed, as well as a financial record including the cash costs and non-cash costs for all hired labor and estimated costs for all unpaid family labor based on farm wage rates in the area. The hours of labor worked by each individual on the enterprise multiplied by the average cost per hour for each kind of labor will result in the most accurate total labor charge to the enterprise. Since livestock work on the ordinary farm is more likely to be handled by fewer individuals and mostly by

family labor, an average rate for the area applied to all work on the enterprise will give satisfactory results.

9. *Interest.* Single enterprise livestock accounts differ from crop accounts in that there is usually a relatively large long-time interest cost for livestock enterprises because of the investment in the breeding or productive inventory of animals which is not accounted for in the indirect charges. For livestock enterprises, two different interest costs must be computed. Interest costs on the more or less permanent investment are determined best by computing the average investment for the year based on the beginning and ending inventories and then charging the prevailing long-time interest rate in the region on this capital. Since 1935, these rates have varied from 4 to 5 per cent. Interest costs also should be charged on the operating capital represented by short-time investments in feed, labor, and other cash costs. For a dairy herd, where income is received monthly, such charges are not necessary, but for a breeding herd where sales are infrequent, interest costs on operating capital are an important item of expense. Operating capital interest rates usually vary from 5 to 6 per cent.

10. *Miscellaneous Costs.* The miscellaneous charges to a livestock account include all items of expense not covered by the previously listed expense groups. Such costs are veterinary and medicine, shoeing, breeding fees, transportation, auction fees, registration fees, and the like. Also, as with crop accounts, certain general farm expenses which are impossible to allocate directly to a livestock enterprise should be considered by including an additional miscellaneous charge equivalent to 5 to 10 per cent of the total costs previously determined.

## Characteristic Income Items for a Livestock Account

The usual income items for a typical livestock account, and suggestions concerning considerations for each income item, are as follows:

1. *Ending Inventory.* The total value of all livestock included in the enterprise should provide one of the most important items of receipt to the enterprise. As with the beginning inventory included in the expenses, the values for all ending inventory items

should be established at the market value less the costs of marketing. In addition to the livestock, ending inventory values for feeds and supplies on hand which have been charged to the enterprise should be listed with the credits to the enterprise in order to offset these prepaid expenses.

2. *Livestock and Livestock Products Sold.* The gross income from all livestock and livestock products sold during the year from the enterprise should be included in the receipts, and not the net income from these sales. For instance, if milk is sold for $5.00 per cwt. but the hauling charges of 25¢ per cwt. and the marketing fees of 10¢ per cwt. are deducted before the check is received, the total gross income at the rate of $5.00 per cwt. should be included in the receipts, and the hauling and marketing charges listed in the expenses rather than including the net amount of $4.65 per cwt. in the receipts. This is necessary in order to show the complete record of financial transactions for the enterprise for use in the analysis and study of the results for the year.

3. *Livestock and Livestock Products Used on the Farm.* One of the most frequently omitted receipt items for livestock accounts is the value of those commodities produced by the enterprise and consumed by the farm family or used by some other farm enterprise. These include milk, eggs, and meat for home consumption and skim milk produced by the dairy enterprise but consumed by the hog enterprise. Care should be taken that the values established for these items are reasonable and based on what the product could be sold for at the farm. Even though the retail price of milk at a nearby city is 20¢ per quart, if the wholesale price at the farm which the producer receives for all milk sold is 10¢ a quart, the 10¢ figure should be used in valuing milk consumed by the farm family. The true value of a product on the farm is the amount which could be obtained for the item if sold at the farm.

4. *Miscellaneous Receipts.* The final group of receipt items for the livestock account should include all income from the enterprise not previously recorded. Usual items of this type include breeding fees and the value of manure produced by the enterprise and used on the cropland. If the manure produced by

the dairy enterprise is collected and distributed over the cropland, the enterprise should be credited with the value of this product, and the crops grown on the land to which it was applied should be charged with a like amount. In some instances, as in a breeding beef cattle herd where no attempt is made to collect manure for fertilizer, the simplest procedure is to omit the value of the manure, since only the pastures used by the cattle receive a benefit, or to include the identical value as both an expense and a receipt. Local sale values should be the governing factor in establishing manure values. If such values are not available, an average rate for the region, such as the $1.00 per ton figure used in some areas, is suggested.

## *Record Forms for Livestock Accounts*

A single enterprise livestock account can be developed by the use of six relatively simple schedules on which all of the needed information can be recorded. These schedules should include a detailed inventory record at the beginning and end of the year (with each animal listed except in poultry accounts), a labor record of usual chore work by months on the enterprise, a record of special labor jobs, a schedule of receipts and expenses, a record of equipment costs and use for the enterprise, and a final summary of all expenses, receipts, and the resulting net income. Examples of these schedules are shown here.

### 1. INVENTORY

| Beginning of Year | | | Ending of Year | | |
|---|---|---|---|---|---|
| Name or Number of Animal | Age | Value | Name or Number of Animal | Age | Value |
| | | | | | |
| | | | | | |
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## 2. CHORE RECORD

| Month | Kind of Work | Hours per Day | Total per Month Labor | Total per Month Workstock | Total per Month Truck |
|---|---|---|---|---|---|
| January | | | | | |
| February | | | | | |
| March | | | | | |
| April | | | | | |
| May | | | | | |
| June | | | | | |
| July | | | | | |
| August | | | | | |
| September | | | | | |
| October | | | | | |
| November | | | | | |
| December | | | | | |
| Total | | | | | |

## 3. SPECIAL LABOR

| Date | Kind of Work | Type of Labor | Man Hours | Horse Hours | Tractor Hours | Truck Miles |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
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## 4. RECORD OF RECEIPTS AND EXPENSES

| Date | Item of Expense | Cost | Date | Item of Receipt | Value |
|---|---|---|---|---|---|
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## 5. EQUIPMENT USE FOR THE ENTERPRISE

| Item | Number | Average Value | Depreciation Rate | Total Depreciation | Per Cent Used by the Enterprise | Depreciation Cost to the Enterprise | Investment to the Enterprise |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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## 6. SUMMARY OF COSTS AND RETURNS

Enterprise____________________ Average number__________

| Item | Totals | | Average per Animal | |
|---|---|---|---|---|
| | Amount | Value | Amount | Value |
| Costs: | | | | |
| Beginning inventory: | | | | |
| Livestock | | | | |
| Feeds | | | | |
| Supplies | | | | |
| Feeds purchased | | | | |
| Supplies purchased | | | | |
| Feed produced on farm | | | | |
| Livestock purchases | | | | |
| Livestock additions | | | | |
| Use of pasture | | | | |
| Use of buildings | | | | |
| Use of tractor | | | | |
| Use of truck | | | | |
| Use of other equipment | | | | |
| Man labor | | | | |
| Workstock use | | | | |
| Interest | | | | |
| Miscellaneous costs | | | | |
| Total costs | | | | |

## SUMMARY OF COSTS AND RETURNS (*Continued*)

| Item | Totals Amount | Totals Value | Average per Animal Amount | Average per Animal Value |
|---|---|---|---|---|
| Returns: | | | | |
| Ending inventory: | | | | |
| Livestock | ______ | ______ | ______ | ______ |
| Feeds | ______ | ______ | ______ | ______ |
| Supplies | ______ | ______ | ______ | ______ |
| Livestock sales | ______ | ______ | ______ | ______ |
| Livestock product sales | ______ | ______ | ______ | ______ |
| Livestock used on farm | ______ | ______ | ______ | ______ |
| Products used on farm | ______ | ______ | ______ | ______ |
| Miscellaneous income | ______ | ______ | ______ | ______ |
| Total returns | ______ | ______ | ______ | ______ |
| Net returns | ______ | ______ | ______ | ______ |

Some states publish special single enterprise record books for specific livestock enterprises. Examples of these include "How to Keep an Account with Dairy Cows," published by the New York State College of Agriculture at Ithaca, and the "Florida Poultry Record Book for Commercial Flocks," published by the College of Agriculture of the University of Florida at Gainesville. Such record books provide a valuable guide for keeping an enterprise account but are not essential. An outline record similar to the example forms presented in this chapter will give the same results and can be modified to meet the special conditions on the farm.

### *The Analysis of Enterprise Accounts*

Although the actual costs and returns from a particular enterprise are of great interest to the producer, the best use which can be made of a single enterprise account is the study of the detailed transactions which occurred during the year and caused the resulting net income. In this manner the strong and weak points of the enterprise and the improvements in operation and management to be made in the following years can be determined. The use of an enterprise record as a tool in making the enterprise more profitable is increased if other similar enterprise records

are available for comparison, but other records are not absolutely essential. Also, an enterprise record kept for a number of years will increase in usefulness each year because of the value of the previous records in determining just how or why the enterprise did not come up to expectations. For proper analysis, however, certain factors common to the enterprise must be computed.

For all enterprises the best measure of profit is the return per hour of labor. The net profit total and the return per acre and per unit are useful measures for comparative purposes, but none of them takes into consideration the relative return in comparison with the most important input factor, farm labor. An enterprise may show a very large net profit per acre but still may be of little value in increasing total returns to the entire farm business if climatic or labor conditions or demands of competing crops are such that only a small acreage can be produced. Another enterprise may show a very low net profit per acre but still may contribute greatly to total farm returns for the year if this enterprise is one which employs a large amount of farm labor at periods when there is no other work for this labor. Thus, in addition to the net returns per acre and per unit, the return per hour and the number of hours of labor on the enterprise should be given consideration in the analysis of the enterprise. The return per hour of labor is computed by dividing the total costs other than man labor by the total hours of labor on the enterprise.

Other important factors useful in the analysis of the different types of enterprise accounts are as follows:

1. *Crop Accounts.* The most useful financial factors are total costs and total returns per acre and per unit, net returns per acre and per unit, costs per acre and per unit for important input items such as seed, fertilizer, labor, and spray materials, and the return per hour of labor. For some crops where both a major and a minor product are grown, the total and net cost of the major product may be computed by subtracting the income from the minor product or by-product from the total costs to obtain the net cost of raising the major product. As an example, for cotton, the value of the cottonseed subtracted from the total costs of production will give the net costs of producing lint cotton, which is the major product. This type of computation assumes that the cost in producing the minor product is exactly the same as the return and that all profits or losses should be

carried by the major product. In addition to the financial factors, certain physical factors are also important in the analysis of enterprise accounts for crops. The average yield per acre is the most valuable of these, but there are others, including the amount of seed used per acre; the pounds of fertilizer applied per acre; the hours of man labor, horse work, and tractor use per acre; and the miles of truck use per acre. These physical factors are more important in making comparisons from year to year than the financial factors which change each year under different cost and price conditions.

2. *Livestock Accounts.* In addition to the return per hour of labor and the total return to labor, other useful financial factors for livestock accounts include the total cost and total return per animal and per unit of production, the net profit per animal and unit of production, the cost per animal and per unit for the important input items such as feed, labor, and pasture acreage, and the unit costs for different seasons of the year. Average inventory values per animal are also useful for some types of comparison. As in crop accounts, when both a major and a minor product are yielded by the enterprise, the cost of the major product can be determined by subtracting the minor product value from the total costs. A dairy herd, for instance, not only provides milk but also produces calves and manure which have a monetary value. To determine the costs of producing milk, the value of the calves and the manure must be deducted from the total costs to obtain the net cost of milk produced. The more useful physical factors include the units of production per animal, such as pounds of milk per cow, number of eggs per hen, pounds of gain per beef animal, and number of pigs raised per sow, and other factors such as the pounds of feed fed per animal, acreage of pasture per animal, hours of man labor per animal and per unit of production, and other similar factors.

3. *Service Accounts.* In the savings that will be made by a careful study of the results of these accounts, single enterprise records of certain service enterprises such as workstock, tractors, trucks, general equipment, and labor will sometimes prove to be as valuable as enterprise accounts for information on the productive activities on the farm. For workstock accounts, factors similar to those used in other livestock enterprises should be employed. For tractors, the total hours of use, the cost per hour

of use under different conditions, the amount and cost per hour for gasoline, oil, and repairs, and the total cost per unit as compared with the cost of hiring the job done are all helpful analysis factors to point out relative efficiency. Similar factors on a per-mile basis can be used for studying the truck or farm automobile account.

## The Use of Single Enterprise Accounts

The single enterprise account is a valuable tool in improving the efficiency of the major farm enterprise. It should be used for this purpose, however, and not as a substitute for the more complete records of the entire farm business. Because of the many difficulties involved in the allocation of the indirect cost items and the danger of misinterpretation of the final results, a single enterprise account must be used with judgment and caution. It should be added as an additional record to the system of farm records and accounts only after the other major records of the complete farm operation, including the inventory and cash account, are kept.

In keeping a single enterprise account, an outline form of the account should be set up, using the characteristic cost and income items as a guide and adjusting these topics to fit the particular enterprise and the special information desired. Then, during the year all the items of direct expense and receipt to the enterprise should be recorded daily as they occur, under the proper headings. Along with these direct receipts and expenses, supplementary records of labor, equipment, building use, and similar items should be kept in order to have an accurate basis for allocating the indirect cost items at the end of the year. Also, complete records of all physical quantities involved in the enterprise itself and in the indirect cost items connected with the enterprise will be needed for proper analysis. Finally, at the end of the year, the direct costs and returns can be summarized, the labor costs computed and transferred to the account, and the indirect items determined and charged or credited to the enterprise.

Although it has been pointed out that the most accurate basis for computing the indirect charges to a single enterprise is to keep sufficient records to determine the actual costs for each

item, in actual practice farmers keeping single enterprise accounts will not accumulate these data; to do so, they would have to keep what would amount to a complete set of detailed double-entry farm cost accounts. Thus, the practical approach to the problem is to keep supplementary records of the large and important items of indirect costs, such as man labor and special items of equipment, and to be as accurate as possible in the computed charges for these items. For the items of lesser importance, such as automobile or truck costs, building use, and common equipment costs, average rates or simple estimates will be much easier to use. Although less accurate, these estimates will not change the final result to a great extent because the minor costs make up such a small part of the total expenses. The methods of allocating the indirect costs and the rates used, in the final analysis, will depend on the judgment of the farm operator and the purpose for which the enterprise record is kept.

## EXERCISE 15

1. Prepare a set of the six forms needed to keep a single enterprise account for a livestock enterprise.
2. Transfer the dairy cattle enterprise record of Farm 21, as presented herewith, to the proper form and summarize each page.
3. Transfer all totals to the summary page and compute the final costs and returns for the enterprise.
4. Compute the following analysis factors for this enterprise:

| | Farm 21 | Average for All Farms in the Community |
|---|---|---|
| (*a*) Number of cows | ______ | 22.8 |
| (*b*) Pounds of grain per cow | ______ | 2,624 |
| (*c*) Tons of silage per cow | ______ | 4.4 |
| (*d*) Tons of hay per cow | ______ | 2.3 |
| (*e*) Cost of all feed and bedding per cow | ______ | $ 190.22 |
| (*f*) Pounds of milk produced per cow | ______ | 8,278 |
| (*g*) Net cost of producing 100 lb. of milk | ______ | $ 3.92 |
| (*h*) Price received per 100 lb. of milk | ______ | $ 3.78 |
| (*i*) Profit or loss per cow | ______ | $ −11.04 |
| (*j*) Hours of man labor per cow | ______ | 138 |
| (*k*) Return for labor per cow | ______ | $ 69.92 |
| (*l*) Return per hour of labor | ______ | $ 0.50 |

5. Prepare a list of the indicated strong and weak points of the dairy enterprise on this farm.

## DAIRY CATTLE ENTERPRISE RECORD, FARM 21

INVENTORY ON JANUARY 1:

13 cows on hand valued at $3,120.
330 bu. oats and barley, valued at $1 per bu., of which 194 bu. were fed to cows during the year.
30 tons mixed hay, valued at $15 per ton, of which 16 tons were fed to cows during the year.
8 tons of straw valued at $8 per ton, of which 5½ tons were used by the cows during the year.
55 tons of corn silage valued at $8 per ton, of which 45 tons were fed to cows during the year.
2,000 lb. of cow feed on hand, valued at $70, fed to cows during the year.
60 bu. of ear corn on hand which was fed to cows during the year, 80¢ per bu.
15 tons cabbage trimmings, valued at $2 per ton, which were fed to cows during the year.

CASH EXPENSES FROM JANUARY 1 TO DECEMBER 31:

11,000 lb. supplemental feed, $370.22
8,600 lb. legume feed, $257.90
1,600 lb. super-30% feed, $51.20
600 lb. bran, $14.30
400 lb. beet pulp, $13
100 lb. exchange dairy, $3
200 lb. hominy, $5.80
250 lb. salt, $5
585 lb. molasses, $14.40
Feed grinding and mixing, $37.42
"Cow-care," $7.90
Veterinarian, $6
Teat dilators, $5
Lime, $1.80

NON-CASH EXPENSES FROM JANUARY 1 TO DECEMBER 31:

1 heifer freshened in August, valued at $150
210 bu. cull potatoes from last year's crop, valued at $42, fed to cows
10 tons pea silage from last year's crop, valued at $60, fed to cows
6 tons hay from last year's crop, valued at $30 per ton, fed to cows
2½ tons straw from last year's crop, valued at $42, used by cows
16.3 tons corn silage from last year's crop, valued at $190.60, fed to cows

LABOR AND MACHINERY RECORD

| | Man Hours | Horse Hours | Tractor Hours | Truck Miles |
|---|---|---|---|---|
| Chores: | | | | |
| January | 180 | | | |
| February | 163 | | | |
| March | 180 | | | |
| April | 175 | | | |
| May | 140 | | | |
| June | 120 | | | |
| July | 124 | | | |
| August | 124 | | | |
| September | 120 | | | |
| October | 124 | | | |
| November | 175 | | | |
| December | 180 | | | |
| Hauling milk | 180 | | | 1,450 |
| Miscellaneous | 10 | 2 | 5 | 10 |
| Total | 1,995 | 2 | 5 | 1,460 |

Man labor was charged @ 84¢ per hour
Horse work was charged @ 38¢ per hour
Tractor use was charged @ 92¢ per hour
Truck use was charged @ 10¢ per mile

INDIRECT EXPENSES ALLOCATED AT THE END OF THE YEAR:

Fire insurance, $10.22
Dairy share of electricity costs, $44.28
Pasture costs for cows, $210.38
Building costs for cows, $116.04
Cost of fences for cows, $76.92
Water system costs for cows, $11.72
Service fees from bull account, $122.82
Interest on investment in cows, $148
Costs for dairy equipment, $116.72
Cost of pasture on cover crop, $20
Cost of pasture in woods, $30

INVENTORY ON DECEMBER 31:

13 cows on hand valued at $2,800
800 lb. of cow feed, $40

### Milk Sales, January 1 to December 31

Grade B milk delivered by operator to local milk plant

| Month | Pounds Delivered | Test | Price per Cwt. | Total Returns | Deductions for Supplies | Deductions for Certificate of Indebtedness | Amount of Check Received |
|---|---|---|---|---|---|---|---|
| January | 8,334 | 3.7 | $3.78 | $ 315.02 | $ 1.20 | $ 8.34 | $ 305.48 |
| February | 9,191 | 3.6 | 3.46 | 318.00 | — | 9.20 | 308.80 |
| March | 10,024 | 3.6 | 2.54 | 254.60 | 1.20 | 10.02 | 243.38 |
| April | 11,397 | 3.4 | 1.88 | 214.26 | 1.20 | 11.40 | 201.66 |
| May | 11,936 | 3.3 | 1.66 | 198.14 | — | 11.94 | 186.20 |
| June | 10,334 | 3.3 | 1.84 | 190.14 | 1.68 | 10.34 | 178.12 |
| July | 7,163 | 3.5 | 2.82 | 202.00 | .84 | 7.16 | 194.00 |
| August | 7,813 | 3.6 | 3.83 | 299.24 | — | 7.82 | 291.42 |
| September | 6,669 | 3.6 | 4.07 | 271.42 | .84 | 6.66 | 263.92 |
| October | 9,603 | 3.5 | 4.40 | 422.54 | 8.00 | 9.60 | 404.94 |
| November | 9,305 | 3.4 | 4.34 | 403.84 | .84 | 9.30 | 393.70 |
| December | 10,434 | 3.5 | 4.20 | 438.22 | 4.60 | 10.44 | 423.18 |
| Total | 112,203 | — | — | $3,527.42 | $20.40 | $112.22 | $3,394.80 |

Other Cash Receipts:

1 cow sold for beef in March, $50
13 veal calves sold, $156
2 bull calves sold, $18
246 feed bags sold, $24

Non-cash Receipts:

1 heifer calf transferred to the heifer account, $50
6,472 lb. of milk used by the farm family, $209.70
1,570 lb. of milk used by hired labor, $50.86
300 lb. of milk fed to heifers, $9.72
92 tons of manure valued at $2 per ton

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*Florida Dairy Farm Account Book*, Gainesville, Department of Agricultural Economics, Florida Agricultural Experiment Station.

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CHAPTER 16

# Principles of Farm Cost Accounts

Five different systems of farm records and accounts have been discussed thus far, including (1) the farm inventory, (2) cash accounts, (3) the combined inventory and cash account, (4) the combined inventory, cash, and credit accounts, and (5) the combined inventory and cash account plus a single enterprise record of the most important farm enterprise. Each of these systems has become progressively more complicated to keep, more difficult to understand, and more valuable as a farm tool to assist in improving the earnings from the farm business.

Each of the systems is designed to meet the specific needs and capabilities of different groups of farmers. The simplest one, the farm inventory, requires only five to ten hours of work each year and supplies much useful information to the farmer who lacks the desire or ability to keep more detailed records, but without other records it gives an incomplete picture of the results of the farm business activities as a complete unit for the year. For many farmers, however, it will be the only record kept and therefore it must be given careful consideration by students of farm accounting. Other simple systems include the combined inventory and cash account or the inventory and accrual accounts. The primary objective of such records is to provide a summary of the financial activities of the business as a whole for a period of time or to provide a "bird's-eye view" of the farm.

For the farmer who desires a general financial summary of his complete operations and a more detailed or microscopic examination of the most important enterprise on the farm, the combined inventory and cash account plus the single enterprise account have been suggested. None of these systems, however, will meet the needs of a producer who wishes to assemble sufficient data to study each and every part of the farm business in detail in

order to have information for accurate adjustments between enterprises, for making such decisions as whether to operate work-stock or tractors, and for accurate budgeting of each productive and non-productive enterprise on the farm. The system needed to supply this backlog of information about every section of the farm business is an organized set of complete farm cost accounts.

## Kinds of Records Needed

An organized group of complete farm cost accounts kept to provide a summary of the results of the farm business as a unit and the detailed results of each part of the business will require five major kinds of records or accounts, including: (1) a complete farm inventory at the beginning and the end of the year or accounting period; (2) a detailed record of all cash and credit transactions during the year with the records for each different part of the farm business kept as a separate T-account or ledger record; (3) a daily record of the hours of man labor, horse work, tractor and equipment use, and auto and truck miles, by enterprises or kind of item to which each applies; (4) records to provide a basis for transfers between accounts, such as the distribution of building costs, tractor, truck, or other equipment use, cropland and pasture utilization, and other similar items; and (5) supplementary records of crop yields, rotations, mortality rates, animal production records, and feeding rates to different enterprises.

1. *The Inventory Record.* The inventory record needed as part of a complete system of farm cost accounts differs from the usual inventory record only in the amount of detail. In order to allocate different capital items directly to the various ledger accounts, a much more detailed inventory account is necessary than for use in obtaining a general picture of changes in the capital structure of the farm as a whole. For instance, a general summary of the total value of the dairy herd on the farm is all that is needed for analysis purposes when used in connection with a farm cash account, while a detailed inventory of the milking cows, the dry herd, heifers, calves, and bulls is needed to have adequate inventory data for the various accounts in a complete system of farm cost accounts. Similarly, total cropland values

are sufficient for the simpler uses, but itemized cropland values, by fields, are needed to determine land charges to each enterprise in a system of farm cost accounts.

This detailed inventory record should be organized into different sections according to the major capital items. For most farms, these groupings will include: (1) a section for farm buildings and other improvements, with each building itemized and the fences, drains, and water system listed separately; (2) the itemized list of the cropland, pasture, and woods, with an accompanying map supplying the number and acreage of each field or plot and a corresponding value in the inventory; (3) an inventory of workstock with the name or number of each, the year purchased, the cost, and the current inventory value; (4) separate inventory records of each productive livestock enterprise on the farm, including: a division of the poultry enterprise into laying hens, pullets, and other poultry; a division of the dairy herd into milking cows, bulls, heifers, and calves; and similar divisions for other livestock; (5) a record of the individual values of the major items of farm equipment, such as automobiles, trucks, tractors, and combines, with the history of each, the current value, and a division of this capital investment into the farm and the nonfarm share if it is used for both personal and farm purposes; (6) separate equipment records for special groups of apparatus such as dairy machinery or haying equipment; (7) a final miscellaneous equipment inventory record in which the many small items of equipment and those used for a large number of enterprises are included; (8) a detailed inventory of feeds and supplies including the description and value of each item and the ledger account or enterprise to which each item should be credited at the end of the year or debited at the beginning of the year; (9) an inventory of fall plowing, growing crops, and the value of seedings used up over a period of years; (10) inventory values for fertilizer and manure applied but not used, by fields; (11) a summary of accounts receivable, accounts payable, and cash on hand; and (12) a final inventory summary page to which all of the above listed items or groups can be transferred.

2. *Cash and Credit Transactions*. Separate T-accounts or ledger accounts must be established for each part of the farm business. On the simplest farm business, there will be at least

twenty of these accounts. A dairy farmer producing only one cash crop will need the following list of ledger accounts: (1) net worth, (2) cash, (3) cows, (4) heifers, (5) hay, (6) oats, (7) potatoes, (8) operator's house, (9) other farm buildings, (10) cropland, (11) pasture, (12) truck, (13) workstock, (14) labor, (15) manure, (16) equipment, (17) personal, (18) general farm expenses, (19) accounts payable, (20) interest, and (21) gain and loss. For farms with a larger number of enterprises or special kinds of products, such as orchards, the number of accounts will be increased greatly beyond this minimum.

In order to facilitate the keeping of these ledger accounts, it is preferable that each be prepared in outline form with headings for the major expense and receipt items. Four examples of these outlined accounts are given in this chapter.

## 1. A LIVESTOCK ACCOUNT

| Debits | F.* | Dollars | Credits | F. | Dollars |
|---|---|---|---|---|---|
| Beginning inventory | | | Ending inventory | | |
| Purchases of cattle | | | Cattle sales | | |
| Transfers from other accounts | | | Cattle used on the farm | | |
| Feed and bedding: | | | Manure | | |
| (*a*) grain | | | Calves produced | | |
| (*b*) hay | | | Milk sold | | |
| (*c*) silage | | | Milk fed to livestock | | |
| (*d*) bedding | | | Milk used by family | | |
| (*e*) pasture | | | Other income | | |
| (*f*) fences | | | Total income | | |
| (*g*) other feed | | | | | |
| Man labor | | | | | |
| Truck and auto use | | | | | |
| Other equipment use | | | | | |
| Special dairy equipment | | | | | |
| Workstock use | | | | | |
| Interest | | | | | |
| Use of buildings | | | | | |
| Veterinary and medicine | | | | | |
| Milk hauling | | | | | |
| Insurance | | | | | |
| Light, water, and power | | | | | |
| Supplies | | | | | |
| All other | | | | | |
| Total expenses | | | | | |
| Gain | | | Loss | | |
| Total debits | | | Total credits | | |

* Folio number.

## 2. A CROP ACCOUNT

| Debits | F. | Dollars | Credits | F. | Dollars |
|---|---|---|---|---|---|
| Growing: | | | Crop sales | | |
| Man labor, hours | | | Crop inventoried | | |
| Workstock use, hours | | | Crop used on farm for other enterprises | | |
| Tractor use, hours | | | Consumed by the farm family | | |
| Truck use, miles | | | By-products sold | | |
| Auto use, miles | | | By-products used | | |
| Other equipment | | | Other income | | |
| Manure, tons | | | Total income | | |
| Lime, tons | | | | | |
| Fertilizer, pounds | | | | | |
| Seed or plants | | | | | |
| Seeding costs from inventory | | | | | |
| Interest | | | | | |
| Spray or dusting materials | | | | | |
| Other growing | | | | | |
| Harvesting: | | | | | |
| Man labor, hours | | | | | |
| Workstock use, hours | | | | | |
| Tractor use, hours | | | | | |
| Truck use, miles | | | | | |
| Other equipment use | | | | | |
| Custom work for threshing, etc. | | | | | |
| Materials | | | | | |
| Other harvesting | | | | | |
| Storing and selling: | | | | | |
| Man labor, hours | | | | | |
| Truck use, miles | | | | | |
| Other equipment | | | | | |
| Use of buildings | | | | | |
| Inspection | | | | | |
| Insurance | | | | | |
| Interest | | | | | |
| Containers | | | | | |
| Commission | | | | | |
| Other | | | | | |
| Total expenses | | | | | |
| Gain | | | Loss | | |
| Total debits | | | Total credits | | |

## 3. AN EQUIPMENT ACCOUNT

| Debits | F. | Dollars | Credits | F. | Dollars |
|---|---|---|---|---|---|
| Beginning inventory | | | Ending inventory | | |
| Purchases | | | Sales | | |
| Repairs | | | Rent received | | |
| Parts and supplies | | | Other income | | |
| Fuel | | | Total income | | |
| Oil | | | | | |
| Tires | | | Other costs charged to productive accounts based on miles, hours, or percentage of total use: | | |
| Grease and greasing | | | | | |
| Farm labor | | | | | |
| License | | | | | |
| Insurance | | | Dairy cattle | | |
| Interest | | | Corn | | |
| Use of buildings | | | Hay | | |
| All other costs | | | Other | | |
| Total debits | | | Total credits | | |

## 4. A LABOR RECORD

| Debits | F. | Dollars | Credits | F. | Dollars |
|---|---|---|---|---|---|
| Operator labor, months | | | All labor charges converted to per hour cost and charged back to each enterprise or item using the labor | | |
| Other unpaid labor, months | | | | | |
| Regular help, months | | | | | |
| Special labor, months | | | | | |
| Special labor, days | | | | | |
| Special labor, hours | | | | | |
| Board furnished hired labor | | | | | |
| House furnished hired labor | | | | | |
| Farm products supplied to labor: | | | | | |
| Milk, qt. | | | | | |
| Hens, no. | | | | | |
| Eggs, doz. | | | | | |
| Broilers, no. | | | | | |
| Pork, lb. | | | | | |
| Beef, lb. | | | | | |
| Potatoes, bu. | | | | | |
| Sweet potatoes, bu. | | | | | |
| Tomatoes, lb. | | | | | |
| Fruit, lb. | | | | | |
| Garden, value | | | | | |
| Wood, cd. | | | | | |
| Automobile used by hired labor | | | | | |
| Other labor costs | | | | | |
| Total debits | | | Total credits | | |

The first two outlined accounts are for the productive enterprises on the farm. For such accounts, the total debits and the total credits are computed after all transfers from service accounts have been made, and the accounts are balanced by entering the difference as a gain or loss and transferring this amount to the gain or loss account. The other outlined accounts are representative of the non-productive service accounts necessary in a complete system of farm cost accounts. These accounts are closed by crediting each with the proportionate amount which should be charged to each productive enterprise, thus balancing the account, and then transferring these itemized charges to the respective productive accounts.

3. *Labor and Related Records.* In order to allocate the charges accumulated in many service accounts, it is necessary to keep daily records of such items as the hours of labor and use of workstock and tractor, as well as the miles expended by truck and automobile for each enterprise or part of the farm business. This information can be assembled by the use of two simple forms, which are reproduced in this chapter.

In using these forms, the chore record may be listed only once a month unless significant variations occur in labor requirements during the month. The major labor record which must be kept daily is the record of work done other than the usual chores. The simplest system is to prepare a series of outlined forms similar to Form 2 and record all work done by all workers on each part of the farm enterprise at the end of each day. If desired, a separate labor record for each enterprise can be assembled; this has the advantage of having the labor record and the cost record of any enterprise available for comparison at any time, but there is the disadvantage of having to thumb through several different pages to record all the work done on any one day.

The accumulation of these daily labor records, by enterprises or kind of work, is the most difficult problem for most farmers in the keeping of complete cost accounts. This is not caused by any special accounting problem but by the difficulty in developing the habit of recording all work daily. Many farmers who postpone this job until the end of the week find that they have forgotten exactly what was done on each enterprise during the week.

4. *Transfer Records.* Certain special records are needed for the allocation of some of the service accounts such as farm build-

## 1. CHORE RECORD ON LIVESTOCK ENTERPRISES

| Month | Hours Worked Each Month on | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Dairy Cows | Heifers | Beef Cattle | Hogs | Hens | Pullets | Broilers | Workstock |
| January | | | | | | | | |
| February | | | | | | | | |
| March | | | | | | | | |
| April | | | | | | | | |
| May | | | | | | | | |
| June | | | | | | | | |
| July | | | | | | | | |
| August | | | | | | | | |
| September | | | | | | | | |
| October | | | | | | | | |
| November | | | | | | | | |
| December | | | | | | | | |
| Total | | | | | | | | |

## 2. DAILY LABOR RECORD

| Date | Operation | Enterprise | Man Hours | Horse Hours | Tractor Hours | Truck Miles | Auto Miles |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

ings, equipment, cropland, pasture, and fertilizer. These records vary according to the kind of account and some must be accumulated throughout the year, while others can be assembled at the end of the year. Examples of four of the more common forms used for the assembly of these data are shown.

## 1. USE OF FARM BUILDINGS

| Proportionate Use by | Dairy Barn | Hay Barn | Poultry House | Tool Shed | Silo | Other Buildings |
|---|---|---|---|---|---|---|
| Dairy cows<br>Heifers<br>Workstock<br>Corn<br>Hay<br>(Continue list of all enterprises)<br>Idle | | | | | | |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

## 2. PERCENTAGE USE OF GENERAL EQUIPMENT

| Proportionate Use by | Kinds of Equipment | | | | | |
|---|---|---|---|---|---|---|
| | Dairy | Poultry | Plowing and Fitting | Cultivating | Hay | Other |
| Dairy cows<br>Heifers<br>Workstock<br>Corn<br>Hay<br>(Continue list of all enterprises)<br>Idle | | | | | | |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

## 3. USE OF CROPLAND

| Accounts Charged with Use of Land | Field Number | | | | | | | | | Total Acres in Enterprise |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Corn<br>Oats<br>Hay<br>Potatoes<br>Dairy cows<br>Workstock<br>(Continue list of all enterprises) | | | | | | | | | | |
| Total acres in field | | | | | | | | | | |

## 4. APPLICATION OF FERTILIZER AND MANURE

| Crop | Fertilizer | | | Manure | | |
|---|---|---|---|---|---|---|
| | Pounds | Kind | Field | Pounds | Kind | Field |
| Corn<br>Oats<br>Potatoes<br>Tomatoes<br>Pasture<br>Hay<br>(Continue list of crops) | | | | | | |
| Total used | | | | | | |

The major use of these records is in allocating the total costs of the service account to the individual productive enterprises. On each farm the problem will differ and the method finally used to allocate the item should be based on the individual situation. As these suggested forms indicate, certain estimates must be made even when keeping complete farm cost accounts. For instance, the only way the producer can determine the part of the tool shed costs to be charged to the tractor and the part to be charged to the mowing machine is by making the best estimate possible.

5. *Supplementary Records.* For analysis purposes, a system of complete farm cost accounts without supplementary physical data is of limited value. The essential basic physical information includes the rates of seeding, fertilizer application, and yields, by fields, for each of the crop enterprises; the rates of feeding and the kinds of feed used in the different seasons of the year, calving percentages, mortality rates, and production rates for the various livestock enterprises; and similar physical information on fuel oil and gasoline consumption per hour for the tractor, and gasoline and oil mileage for the truck and automobile. This information is assembled most easily by including an extra page or two with each ledger account to record related physical data and notes on weather conditions and unusual happenings that occur during the year and affect the enterprise.

## Accounting Principles Used in a System of Farm Cost Accounts

1. *Principle of Double Entry.* If each part of the farm business is to be studied as a separate unit, the assumption must be made that every financial transaction affects at least two different departments of the farm business. Hay fed to the dairy cows must be recorded as a debit to the dairy cow account and a credit to the hay record. A cash sale of potatoes must be credited to the potato account and the amount debited to the cash account. A cash expense for oat seed is a debit to the oat account and a credit to the cash account. Poultry feed purchased on credit must appear as a debit or charge to the poultry account

and a credit to accounts payable. When the bill is paid, accounts payable must be debited and the cash account credited with the amount. For the service accounts, one transaction usually involves four different recordings before the record is complete. A payment to hired labor, for instance, must be originally listed as a debit to the labor account and a credit to cash. At the end of the year, when the labor account is summarized and closed, the labor account is credited with the labor charges to the different enterprises, closed at cost, and each enterprise debited with its proportionate share of these labor expenses. Every transaction occurs as both a debit and a credit.

This approach introduces the basic principle of all business accounting: the principle of double entry. In actual practice, however, the usual farm cost accounting system can be developed to provide two important short cuts to simplify the keeping of the records even with a double-entry system. First, because of the fact that the typical farm has fewer individual transactions each day than most other businesses, the first step in the usual double-entry system, the original recording of all transactions in the chronological journal record, can be eliminated. This is done by using the individual ledger accounts as the point of both individual and of final entry. It is just as accurate to list a cattle sale as a credit to the cow account and a debit to cash as it is to list both items in the journal and later transfer these transactions to the ledger accounts. If there are many transactions each day, it is preferable to employ a relatively inexpensive bookkeeper to list these items in journal form and make the transfers to the journal at the end of the week or month. For the farmer who keeps his own cost accounts, however, the amount of time required to keep his books is reduced by one-half with the elimination of the journal.

Second, most of the financial transactions for a typical farm business involve cash as either a debit, if received, or a credit, if paid out. The necessity of recording each cash transaction in both the individual account involved and in the cash account can be delayed to the end of the accounting period by marking a "c" in the folio column of the ledger account involved and then

assembling the complete cash account at the end of the year when the books are being closed and when there is more time to record the transactions. This approach will permit recording any cash transaction in only one place in the books when the transaction is made and thereby will reduce further the time required in keeping the daily records. With this system, it still will be necessary to list non-cash transactions as both a debit and a credit at the time the transaction occurs.

2. *Identification of Cross-entries.* The folio column of a ledger account serves a valuable purpose in identifying the source or corresponding debit or credit for each entry in any account. To be used for this purpose, the different ledger accounts should be numbered and the debit side of each page given an additional identification in comparison with the credit side of each page. If the workstock account is number 6 in the system, the debit side of the first page of this account should be labeled as page 6.1, and the credit side as 6.2. If additional pages are needed for this account, the debit side of each page should continue to carry the odd number identification, as 6.3, 6.5, and up, while the credit side is identified as page 6.4, 6.6, and up. Then each time an entry is made, the page number indicating the cross-entry should be listed in the folio column. This system will serve two purposes: first, it will act as a reminder that the proper cross-entry has been made; and second, it will serve to indicate whether the entry has been made on the proper side of the other account, since all the folio identifications on the credit side of an account will end in odd numbers (to correspond with debit entries to other accounts) while the debit side folio numbers will all end in even numbers.

This transaction is illustrated on page 246.

| | |
|---|---|
| November 18: | |
| Sold 5 cows for cash | $510 |
| Bought 1 ton hog feed for cash | 50 |
| Transferred 5 tons hay from hay barn to dairy barn, value | 100 |
| Sold 5 hogs to butcher, on credit | 120 |
| Supplied hired man with 5 gal. milk, valued at 80¢ per gal. | 4 |

| Page 5.1 | | 5. Dairy Cows | | | Page 5.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| Nov. 18—5 tons hay | 11.2 | 100.00 | Nov. 18—5 cows sold | c | 510.00 |
| | | | Nov. 18—5 gal. milk to hired man | 15.1 | 4.00 |

| Page 8.1 | | 8. Hogs | | | Page 8.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| Nov. 18—1 ton feed | c | 50.00 | Nov. 18—5 hogs to butcher | 22.1 | 120.00 |

| Page 11.1 | | 11. Hay | | | Page 11.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| | | | Nov. 18—5 tons hay to cows | 5.1 | 100.00 |

| Page 15.1 | | 15. Labor | | | Page 15.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| Nov. 18—5 gal. milk to labor | 5.2 | 4.00 | | | |

| Page 22.1 | | 22. Accounts Receivable | | | Page 22.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| Nov. 18—butcher, for 5 hogs | 8.2 | 120.00 | | | |

3. *Valuation of Transfers.* The object of a system of complete farm cost accounts is to provide information for study of each of the individual parts of the farm business. To do this in an objective manner, each account or enterprise must be considered as a separate unit and held accountable for all transactions affecting the unit. Thus all transfers between accounts should be made at the market price of the product when it has reached a marketable stage wherever it is possible to establish a reasonable market value for the product. If hay sells for $20 per ton at

the farm, then all hay produced and consumed by the dairy herd should be credited to the hay account at this rate and charged to the dairy herd at the same rate. This approach places both the hay account and the dairy account on a self-sufficient basis so that the true costs and returns for each can be determined.

If an unusually good crop season prevails and high hay yields are obtained with a resulting cost per ton of only $10, the hay account, and not the dairy cow account, should receive the credit for this profit. If yields were low and the cost per ton for all hay produced amounted to $30 per ton, the hay account should bear this loss.

Some commodities produced on the farm, however, are unmarketable goods; items such as silage and temporary pastures fall into this class. The best way to handle these products in the ordinary farm cost account system is to close the accounts at cost by charging the product to the enterprise using it at the net cost of the item.

4. *Treatment of Different Accounts.* All accounts in the system should be treated alike. Although the "opportunity cost" theory offers some justification for changing the labor rates according to the enterprise to which the labor is applied or the time of the year, or for varying the land use charges in accordance with other possible use of the land, the only way that a clear analysis can be made of each account in comparison with the others in the system is by handling all accounts on the same basis. At the end of the year, after the accounts have been closed, certain adjustments or recomputations can be made to determine the interrelationships between enterprises if some other system of charges had been followed. During the year, however, it is preferable that all accounts be treated in the same manner so that the results can be understood clearly and easily.

## EXERCISE 16

1. The results of a year's farming operations for Farm 22 are presented on the following pages. Prepare and record a complete cost account record for this business according to the following steps:
   (*a*) Outline a series of ledger accounts (one account to the page), for (1) net worth, (2) cash, (3) cows, (4) heifers, (5) hay, (6) oats, (7) potatoes, (8) operator's hours, (9) barn, (10) cropland,

(11) pasture, (12) truck, (13) horses, (14) labor, (15) manure, (16) equipment, (17) personal, (18) general farm expenses, (19) accounts and mortgage payable, (20) interest, and (21) loss and gain.

(*b*) Transfer the beginning inventory items to the net worth account, recording each asset as a credit to the net worth account and as a debit to the individual account using the item, and each liability as a debit to the net worth account and as a credit to the individual liability account. Indicate the source of all transfers by listing in the "folio" column the account and page number from which the item came.

(*c*) Enter all transactions listed for Farm 22 in the order they occur. Each transaction must be entered as a debit to one account and as a credit to another. A cash purchase is a debit to the account which used the item bought and a credit to the cash account; a cash sale is a credit to the account from which the sale was made and a debit to the cash account. Indicate the source of each transaction in the "folio" column.

(*d*) Record the inventory at the end of the year in the net worth account by entering each asset as a debit to the net worth account and as a credit to the individual account which had the asset on hand at the end of the year. Enter each liability as a credit to the net worth account and as a debit to the individual liability account.

(*e*) Prepare a trial balance of the accounts in order to be sure that all debit and credit entries have been made and to check for possible mistakes.

(*f*) For the non-productive accounts, list the basis for apportioning costs to the productive enterprises on the credit side of each ledger account. Do not attempt to compute these costs or close the accounts; this will be done as part of Exercise 18.

## FARM 22

Beginning inventory:

| | |
|---|---|
| Cash | $1,200 |
| Cow feed | 200 |
| Cows | 3,000 |
| Heifers | 600 |
| Equipment | 2,000 |
| Operator's house | 2,400 |
| Barn | 4,000 |
| Cropland, 60 acres at $60 per acre | 3,600 |
| Pasture, 50 acres at $20 per acre | 1,000 |
| Horses | 800 |
| Truck | 600 |

The only liability was a mortgage for $1,000.

During the year the following transactions occurred:

A. Summarized from the cash account:

| | |
|---|---|
| **Expenses** | |
| Feed for cows | $1,600 |
| Feed for heifers | 240 |
| Feed for horses | 160 |
| Other costs for cows | 400 |
| Other costs for heifers | 90 |
| Other costs for horses | 50 |
| Equipment repairs | 140 |
| Interest paid on mortgage | 50 |
| Barn repairs | 150 |
| Truck repairs | 60 |
| Taxes | 300 |
| Fire insurance | 100 |
| Gas and oil for truck | 170 |
| Truck license | 24 |
| Hired labor—100 days | 300 |
| Fertilizer for potatoes | 80 |
| Seed potatoes | 40 |
| Spray materials for potatoes | 20 |
| Oat seed | 20 |
| Personal expenses | 1,200 |
| Threshing oats | 32 |
| **Receipts** | |
| Milk sales—1,400 cwt. | $5,600 |
| Heifer sold | 120 |
| Cow sold | 100 |
| Potatoes sold—300 bu. | 300 |
| Calves sold | 20 |

B. Summarized from the crop records:

1. Two acres of potatoes planted, 400 bu. produced, 300 bu. sold, 50 bu. used by family at $1 per bu., 50 bu. used by hired labor at $1 per bu.
2. Eight acres of oats planted, 320 bu. harvested, 120 bu. fed to horses, Two hundred bu. fed to dairy cows at 80¢ per bu. Four tons straw at $6 per ton used by cows.
3. Fifty acres of hay, 50 tons harvested, 40 tons fed to cows, 4 tons to heifers, and 6 tons to horses, at $20 per ton.

C. Summarized from the livestock records:

1. One hundred fifty cwt. milk used by the farm family at $2 per cwt. One hundred twenty tons of manure was applied to the hay land (this is the usual practice).
2. One heifer freshened in April, valued at $150.
3. Two calves added to heifer account in June, valued at $20 per calf.
4. One cow died in December.

5. One hundred tons of manure was supplied by the cows and 20 tons by the heifers; valued at $2 per ton at the barn.

The assets at the end of the year were as follows: cash, $2,104; cow feed, $50; cows, $2,900; heifers, $800; equipment, $1,800; operator's house, $2,400; barn, $3,800; cropland, $3,600; pasture, $1,000; truck, $500; horses, $700; or a total of $19,654. The only liability was the mortgage for $1,000.

The following estimates were made at the end of the year:

1. Of total equipment costs, 40% should be charged to cows, 10% to heifers, 10% to potatoes, 10% to oats, 25% to hay, and 5% to manure.
2. Of the total barn costs, 50% should be charged to cows, 10% to heifers, 5% to horses, and 35% to hay.
3. Of the total pasture costs, 80% should be charged to cows, 10% to heifers, and 10% to horses.
4. Manure costs should be charged to hay since about the same amount is applied each year.

Other decisions made by the operator before closing the books for the year: he valued his time at $100 per month for 12 months, not including the value of the house rent and milk consumed. He decided these privileges should be charged as a cost of labor. There was no other unpaid family labor.

The labor record for the year was as follows:

| | Hours of Man Labor | Hours of Horse Work | Miles of Truck Use |
|---|---|---|---|
| Cows | 2,700 | 20 | 1,400 |
| Heifers | 250 | 10 | 100 |
| Hay | 500 | 800 | 50 |
| Oats | 400 | 600 | 50 |
| Potatoes | 40 | 60 | 100 |
| Horses | 20 | — | — |
| Cropland | 30 | 60 | 10 |
| Barn | 70 | — | 30 |
| Manure | 120 | 240 | — |
| Equipment | 40 | — | 10 |
| Total | 4,170 | 1,790 | 1,750 |

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CHAPTER 17

# Keeping Complete Farm Cost Accounts

The first step in keeping complete farm cost accounts or any other record is to make a definite decision as to the purposes to be served by the record or the uses to be made of the information after it has been collected. The individual desiring these data must have the ability and inclination to keep the needed records and analyze the results.

## Planning the System of Records

1. *The General Objectives.* For farm cost accounts, the principal purpose is to supply complete information about each and every part of the farm business. The ability to keep the necessary records for obtaining this result is gained by several years' experience in keeping the simpler farm records, such as the simple farm inventory and cash account, or in other similar bookkeeping experience. Formal training in accounting is desirable but not essential. Combined with this experience, there must be such a sincere desire for the information supplied by these records that the individual is willing to spend 2 to 3 days at the beginning of the year in preparing the record system, 20 to 30 minutes each day in keeping the records, and 3 to 4 days at the end of the year in closing and analyzing the accounts. In addition, the results for the first year or two are likely to be disappointing because the best system of farm cost accounts for any individual farm can be developed only by trial and error after several years' experience with the special accounting problems of that specific farm.

2. *Outline of the Records to Be Kept.* Once the decision has been made and the objectives are determined, the next step is to

prepare a list of the accounts to be kept or the different departments into which the farm business is to be divided for accounting purposes. This list of accounts should include all enterprises on which detailed information is desired, all supplementary accounts needed for allocation purposes, and other accounts needed for summary or analysis. On most farms, the productive accounts will include the major livestock enterprise, broken down into units, and the major crop enterprises. On a dairy farm, for instance, there should be at least three different accounts for the dairy enterprise: a record of the dairy herd itself, to determine the costs and returns from producing milk; the heifer account, to determine the costs of raising a heifer to milking age in comparison with the costs of replacements if purchased; and the bull account, to determine the breeding costs in comparison with hired service charges or artificial breeding association costs. For a large poultry enterprise, an account will be needed for the laying flock, another for the production of pullets, and still another for the production of broilers or fryers. If the enterprise is of little importance on the farm, all three units can be included in one account.

The usual service accounts for major allocation items will include labor, power, and equipment records for man labor, trucks, automobiles, tractors, workstock, general equipment, and any special equipment items; the several real estate accounts for the operator's house, tenant houses, dairy barn, other buildings, fences, water system, cropland, pasture, woods, and orchards; the many miscellaneous accounts for interest, taxes, feeds and supplies, insurance, fertilizer and lime, outside labor, and personal expenses; and the major capital accounts for cash, accounts receivable, accounts payable, and net worth, as well as the gain or loss account.

3. *Preparation of the Record Forms.* The third step is the preparation of detailed record forms for the inventory record, for each ledger account, for the labor and equipment use records, and for the other physical records of performance. A general outline of the different forms needed has been presented in the previous chapter. The ledger accounts should be numbered and grouped so that those accounts used most frequently can be found

most easily. The system of account numbers with page numbers for each account is of value in checking transfers from one account to another.

4. *Time and Place for Keeping the Records.* Unless all financial transactions and physical changes are recorded promptly, many are likely to be forgotten, and an inaccurate or incomplete record will result. The best way to insure keeping a complete record is to establish a definite time each day for the listing of the different transactions of that day, to designate to each individual on the farm certain specific responsibilities in the keeping of the records, to place each of the record forms in the most convenient place, and then to adhere to this planned schedule with rigid regularity until the proper accounting habits are developed. Most disappointments in the keeping of farm cost accounts occur not because of the complexity of the records or the accounting problems involved but because of the failure to record promptly all transactions as they occur. For many farmers, the period immediately after the evening meal is an opportune time to bring the records up to date; for others, the slight break between the completion of the morning chores and the start of regular field work is very suitable. Labor records should be kept daily, egg production records as often as twice daily, and all financial transactions should be listed when they occur, with the necessary transfers made at the same time. Usually, the egg records should be kept in the poultry house where the eggs are counted and packed, the feeding records should be in the barn where the feed is used, the labor records should be as close as possible to that favorite chair by the radio, as that is the place where most farmers stop at the end of the day's work, and the financial ledger accounts should be in the desk drawer nearest the checkbook.

## Keeping the Records during the Year

1. *The Beginning Inventory.* The first job of actual recordkeeping for a system of farm cost accounts is taking the beginning inventory and transferring the different capital items to the various operating accounts. It is preferable to use a separate inventory book in taking the inventory so as to assemble all the

details needed. After the inventory is taken, it should be summarized and recorded as a net worth ledger account. Finally, each individual asset on the credit side of the net worth ledger account must be debited to the individual ledger account which is to have the use of the asset during the year, and each individual liability item on the debit side of the net worth ledger account must be credited to the proper ledger account. A simplified example of the method of handling the beginning inventory is given:

| | |
|---|---|
| Beginning inventory: | |
| Cash | $ 500 |
| Cows | 1,000 |
| Barns | 1,200 |
| Equipment | 800 |
| Cropland | 2,000 |
| Total assets | $5,500 |
| Mortgage payable | 1,500 |
| Net worth | $4,000 |

1.1 — 1. Net Worth — 1.2

| | F. | $ | | F. | $ |
|---|---|---|---|---|---|
| Beginning of year | | | Beginning of year | | |
| Mortgage payable | 7.2 | 1,500.00 | Cash | 2.1 | 500.00 |
| | | | Cows | 3.1 | 1,000.00 |
| | | | Barns | 4.1 | 1,200.00 |
| | | | Equipment | 5.1 | 800.00 |
| | | | Cropland | 6.1 | 2,000.00 |

2.1 — 2. Cash — 2.2

| | F. | $ | | F. | $ |
|---|---|---|---|---|---|
| Beginning inventory | 1.2 | 500.00 | | | |

3.1 — 3. Cows — 3.2

| | F. | $ | | F. | $ |
|---|---|---|---|---|---|
| Beginning inventory | 1.2 | 1,000.00 | | | |

| 4.1 | | | 4. Barns | | 4.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| Beginning inventory | 1.2 | 1,200.00 | | | |

| 5.1 | | | 5. Equipment | | 5.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| Beginning inventory | 1.2 | 800.00 | | | |

| 6.1 | | | 6. Cropland | | 6.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| Beginning inventory | 1.2 | 2,000.00 | | | |

| 7.1 | | | 7. Mortgage Payable | | 7.2 |
|---|---|---|---|---|---|
| | F. | $ | | F. | $ |
| | | | Beginning inventory | 1.1 | 1,500.00 |

After all the inventory items have been recorded in the net worth account and then transferred to the individual operating accounts, a check on the accuracy of the transfers can be made by making a trial balance of the accounts. If all transfers have been made properly, the sum of the debits for all accounts will equal the sum of all the credits. A trial balance for the seven listed accounts is printed herewith.

| Accounts | Debits | Credits |
|---|---|---|
| 1. Net worth | $1,500 | $5,500 |
| 2. Cash | 500 | — |
| 3. Cows | 1,000 | — |
| 4. Barns | 1,200 | — |
| 5. Equipment | 800 | — |
| 6. Cropland | 2,000 | — |
| 7. Mortgage payable | — | 1,500 |
| Total | $7,000 | $7,000 |

2. *Recording Financial Transactions.* Each financial transaction or transfer affecting one or more accounts should be listed

as it occurs during the year. Every entry must be listed as a debit to one account and a credit to another, with the proper folio identification given so that any transaction can be checked at any time. Cash transactions occur most frequently. For cash items, the time required daily to keep the records may be reduced by indicating the type of transaction with the use of a "c" in the folio column and the omission of a cross-entry to the cash account until the end of the year. At that time, a summarized cash account can be built from the total cash debits, and the total cash credits from the individual accounts. This does have a disadvantage, however, in that there is no immediately available record of cash receipts and expenses other than the usual checkbook or bank statement record. Also, when cash transactions are not cross-entered immediately to the cash account, it is impossible to take a trial balance of the accounts until the cash is summarized at the end of the year.

3. *Keeping the Non-financial Records.* All non-financial records should be kept daily or weekly as the operations develop. To be relatively accurate, labor records for work on crops or special jobs other than chores on livestock must be recorded as the work is done. The distribution of feed to the different livestock enterprises must be listed as the feed is consumed, and the use of the truck, tractor, combine, or other equipment must be indicated according to their use each day and week throughout the year. Production records for hens and cows, and similar accounts, should be checked and listed frequently in order to avoid inaccurate estimates at the end of the year. Production results of crop enterprises, mortality rates for livestock, the disposition of feeds and supplies, the application of fertilizer and manure by fields and crops, and other similar physical data should be listed as additional information in the ledger accounts or indicated elsewhere so that this information is available when the record is closed and analyzed. Also, when a product which is used by another enterprise on the farm reaches the marketable state, the account producing it should be credited with the market value of the product, and the account using the product should be debited with the same amount.

4. *The Ending Inventory.* At the end of the year or accounting period, the final primary financial information needed to complete the basic records is the ending inventory. The same care

and attention should be given to the ending inventory as to the beginning one, taking the record in detail, checking all items, and comparing all items with the beginning inventory to be sure that values are in line and no omissions have been made. After this inventory is taken, it also should be summarized and recorded in the net worth ledger account. Each asset should be entered as a debit to the net worth account and as a credit to the individual account which had the asset on hand at the end of the year. Each liability should be recorded as a credit to the net worth account and as a debit to the individual liability account. A simplified example of the final net worth account at the end of the year is given.

| | |
|---|---|
| Ending inventory: | |
| Cash | $ 300 |
| Cows | 1,100 |
| Barns | 1,100 |
| Equipment | 900 |
| Cropland | 2,000 |
| Total assets | $5,400 |
| Mortgage payable | 1,000 |
| Net worth | $4,400 |

1.1 — 1. Net Worth — 1.2

| | F. | $ | | F. | $ |
|---|---|---|---|---|---|
| Beginning of year: | | | Beginning of year: | | |
| Mortgage payable | 7.2 | 1,500.00 | Cash | 2.1 | 500.00 |
| | | | Cows | 3.1 | 1,000.00 |
| | | | Barns | 4.1 | 1,200.00 |
| | | | Equipment | 5.1 | 800.00 |
| | | | Cropland | 6.1 | 2,000.00 |
| End of year: | | | End of year: | | |
| Cash | 2.2 | 300.00 | Mortgage payable | 7.1 | 1,000.00 |
| Cows | 3.2 | 1,100.00 | | | |
| Barns | 4.2 | 1,100.00 | | | |
| Equipment | 5.2 | 900.00 | | | |
| Cropland | 6.2 | 2,000.00 | | | |
| | | | Net gain for the year (to the gain or loss account) | 22.1 | 400.00 |
| Total debits | | 6,900.00 | Total credits | | 6,900.00 |

The complete set of individual accounts kept with this net worth account will indicate in detail the reasons for the indi-

cated change in the net worth account. The net gain of $400 in the example given may have been due to a combination of net gains of $1,000 on the cow account and $1,100 on the poultry account less a loss of $800 on the potato account and $900 in personal expenses for the year, or any other combination of losses and gains.

## *Allocating Service Accounts*

Many of the individual ledger accounts in the common farm cost accounts system will first have to be closed out at cost and the net costs allocated to other enterprises before the final returns from each of the different productive enterprises can be determined. The objective of maintaining service accounts, such as man labor, equipment, buildings, cropland, pasture, workstock, and other similar items, in the system is to provide a basis for assembling the many indirect cost items or joint costs that cannot be listed immediately as direct charges to the different productive enterprises. After these costs are determined, the major problem is the allocation of each to the productive enterprises in the most accurate way possible. If these accounts were closed to gain or loss, a true picture of the profit or loss from the productive enterprises could not be obtained from the records. In addition, some productive accounts, such as silage and pasture, have no true market value in many areas, as these items ordinarily are not bought or sold. For these accounts, the only reasonable procedure is to close them at cost.

In the allocation of the indirect charges assembled in the service accounts, farm cost accounting varies from usual commercial accounting because there are no rigid rules which will apply on all farms and no one rule which will be effective for all allocation problems on the same farm. Certain estimates are necessary, but these estimates are made best by each individual producer after due consideration has been given all the problems on his specific farm. Some major guides or common methods of handling each service account can be studied, but for each account, the suggested method should be analyzed carefully before being followed on any individual farm. The more important service accounts and the usual way of allocating the costs of each are:

1. *Man Labor.* The most accurate basis for closing the labor account is the total man hours worked on each part of the farm business. If an attempt is made to adjust the labor rate according to the amount of time consumed on a job or to the individual who did the work, this arbitrary interpretation makes it difficult to obtain a clear analysis of the resulting returns from the different enterprises. Special labor at unusual rates for specific enterprises or labor paid on a piecework basis can be transferred directly to the enterprise involved at cost. All other labor should be charged to each enterprise at the average hourly cost of all farm labor for the year. A simplified example is as follows:

12.1 — 12. Man Labor — 12.2

| | F. | $ | | F. | $ |
|---|---|---|---|---|---|
| Regular hired labor | c | 600.00 | Cotton picking (3,500 hr. all other labor at total cost of $1,750, or 50¢ per hr.) | 11.1 | 75.00 |
| Unpaid family labor | 28.2 | 100.00 | Cotton—1,800 hr. | 11.1 | 900.00 |
| Operator labor | 28.2 | 500.00 | Cows—800 hr. | 7.1 | 400.00 |
| Farm privileges: | | | Corn—600 hr. | 13.1 | 300.00 |
| House rent | 29.2 | 300.00 | Garden—300 hr. | 26.1 | 150.00 |
| Garden | 26.2 | 150.00 | | | |
| Milk | 7.2 | 100.00 | | | |
| Cotton picking hired at $2.00 per cwt. | c | 75.00 | | | |
| Total | | 1,825.00 | Total | | 1,825.00 |

2. *General Equipment.* Equipment inventories and costs should be divided into groups, according to the kind of equipment, and a total cost determined for each group, such as dairy, poultry, and field equipment. After the group costs are obtained, these expenses can be charged to the different enterprises according to the use made by each. Dairy equipment costs to the cow, heifer, and bull accounts can be distributed on the basis of the average animal units in each. Plowing equipment can be distributed according to the number of acres plowed for each crop, and general equipment according to the proportion of total crop acreage each crop enterprise occupied. Equipment costs can also be distributed on the basis of the number of hours worked on each enterprise.

3. *Automobile, Truck, and Tractor.* The best basis for distributing automobile and truck costs is the miles expended for each part of the farm business. Care should be taken that per-

sonal uses are not charged to some part of the farm business. Mileage which cannot be accounted for should be allocated according to a reasonable estimate of use. The tractor is ordinarily allocated according to hours of use, although this should sometimes be modified if certain uses require more power than others. Workstock also are handled on the same basis; to be able to make reasonable allocations, separate records should be kept for each group of workstock if different classes of workstock are used for different operations, as mules for field work and horses for cattle management.

4. *Buildings.* If the operator's house is a typical farm home, it is best to charge the costs to labor. If part of the house is used for certain farm enterprises, such as incubation or potato storage, a proportionate charge should be made to these enterprises based on the relative use of the whole by each enterprise. Tenant houses should be handled in the same way. For other farm buildings, such as dairy barns, poultry houses, and tool sheds, the usual method is to divide the total investment, according to the enterprises using each building, on the basis of floor space occupied by each. Costs computed per $100 invested in buildings multiplied by the amount invested for each enterprise will result in a reasonable charge to each enterprise. A percentage estimate of the use of each building by the different enterprises when applied to the total costs of the building is simpler but less accurate.

5. *Fences and Drains.* The distribution of fence costs depends on the use of the fences. If the objective is to keep the livestock under fence, the different livestock accounts should be charged according to the animal units of each class that used the pastures. If the objective is to keep the livestock out of the cropland, the fencing costs should be charged to the different crops produced in proportion to the relative acreage of each. Drains and ditching costs ordinarily are charged to the crops produced on the fields treated; if all cropland receives the same relative amount of treatment, this account can be combined with the cropland account.

6. *Cropland and Pasture.* Cropland charges should be made on the basis of the actual use of the land during the year. If one crop only is produced on the land during the year, an alloca-

tion based on the proportion of the total cropland planted to each crop is sufficient. If two or more crops are planted on some of the land, the per-acre cost of this part of the cropland should be divided equally between the different crops. However, if the first crop is a legume which has been planted for green manure to build up the land for the second crop, the simplest procedure is to charge all land costs to the second or major cash crop. When part of the cropland remains idle during the year, the costs for this land should be transferred directly to loss rather than to any of the productive accounts. Pasture costs are distributed best according to the animal units pastured and the days pastured for each class of livestock.

7. *Manure.* Total manure costs, including the value of the manure at the barn and the labor, equipment, and workstock or power employed to distribute it to the cropland or pasture, generally are allocated to the different crops grown on the cropland where applied or to the pasture costs. In the northern part of the United States manure costs ordinarily are distributed over a period of four years, charging off 40 per cent for the first year, 30 per cent the second, 20 per cent the third, and 10 per cent the fourth year, to the crop grown on the land each year. In the southern part of the country, this distribution is typically 60 per cent the first year and 40 per cent the second year. In either case, it is necessary to keep detailed records each year in order to allocate manure charges accurately, because for any one year the applications made to the different fields in several previous years must be known. If the same amount is applied each year to all cropland, the same result can be obtained in a much easier manner by charging total manure costs each year to the cropland account before closing this account.

8. *Other Service Accounts.* In spite of all the care exercised in setting up ledger accounts for each kind of expense, there are usually a number of expense items which will be placed in the final operating account for general expenses. These costs include such items as contributions, advertising, taxes, insurance, electricity, telephone, and membership fees in farm organization. If any one of these individual items is of much significance, it will pay to establish a special basis for its allocation. Electricity, for instance, can be allocated according to the kilowatt hours used

by each enterprise, and taxes according to the inventory values of the different items of real estate. On most farms, however, these costs can be grouped in one account and distributed according to the productive man work units in each enterprise or the man hours of direct labor used by each.

## EXERCISE 17

1. The complete labor record for Farm 23 is summarized below. Prepare a ledger account for this record, list all debits, compute the cost per hour, and close out the account by crediting the account with the value of the work done on each enterprise.

### LABOR RECORD, FARM 23

DEBITS

| | |
|---|---|
| Hired man #1 ($160 per month, all privileges charged, no board furnished) | |
| Paid in cash for work done during the year | $1,124.56 |
| Value of privileges (meat, eggs, house rent) | 400.00 |
| Salary taken in the form of gas and oil | 155.44 |
| Salary due on December 31 for work done during the year | 240.00 |
| Hired man #2 ($120 per month, and board) | |
| Cash paid | 360.00 |
| Value of board furnished during the year | 150.00 |
| Day help (205 days) | |
| Paid in cash | 556.12 |
| Paid in gasoline | 2.60 |
| Meals furnished day help | 120.00 |
| Privileges (meat, eggs, vegetables, wood) for day help | 86.40 |
| Other labor (unpaid) | |
| Operator, 12 months @ $120 not including privileges | 1,440.00 |
| Operator's son for 360 hours | 144.00 |
| Value of privileges for the operator | |
| House rent | 200.00 |
| Chickens for meat | 70.32 |
| 8 cd. wood | 48.00 |
| 5,600 lb. of milk | 136.10 |
| One veal calf | 20.00 |
| 402 doz. eggs | 192.96 |
| Garden produce | 120.00 |
| 40 bu. potatoes | 40.00 |

Time spent during the year on each enterprise or account was as follows:

| | |
|---|---|
| 2,321 hr. | —cows |
| 144 hr. | —heifers |
| 106 hr. | —herd bull |
| 5 hr. | —veal calves |
| 2,048 hr. | —hens |
| 949 hr. | —chicks |
| 53 hr. | —sheep |
| 192 hr. | —corn silage |
| 14 hr. | —garden |
| 333 hr. | —hay |
| 40 hr. | —oats and barley |
| 1,796 hr. | —potatoes |
| 38 hr. | —fall plowing |
| 32 hr. | —grinding feed |
| 133 hr. | —outside labor |
| 9 hr. | —gas and oil |
| 147 hr. | —manure |
| 5 hr. | —operator's house |
| 178 hr. | —other buildings |
| 45 hr. | —cropland |
| 39 hr. | —fences |
| 260 hr. | —woods |
| 226 hr. | —horses |
| 43 hr. | —auto |
| 25 hr. | —tractor |
| 234 hr. | —equipment |
| 9,415 | Total hours |

2. The partial equipment record for Farm 24 is summarized on the following page. The debits for this account are complete except for interest charges; compute interest charges at 5 per cent of the average value. Set up the hay and the orchard equipment account as two separate ledger accounts; add the interest charges; and close the accounts by crediting each with the itemized proportionate charges which are to be debited to the various other accounts.
3. Prepare a summary of the net costs of hay equipment and orchard equipment by grouping all expenses as depreciation, interest, insurance, repairs, and other costs.
4. A total of 83 acres (including 146 tons) were harvested with the hay equipment. In the previous year, only 46 acres (including 61 tons) were harvested. Assuming that the costs of hay equipment were the same in both years, compute the cost per acre and the cost per ton for equipment use in both years.

## EQUIPMENT RECORD, FARM 24

| Debits | | Credits | |
|---|---|---|---|
| **Hay equipment** | | | |
| Beginning inventory | $ 272.00 | Ending inventory | $ 456.00 |
| Purchased side-delivery rake | 220.00 | | |
| Ropes and staples for loader | 1.70 | | |
| Ropes | 14.32 | | |
| Insurance | 2.00 | | |
| Use of buildings | 10.00 | | |
| Orchard sprayer | | | |
| Beginning inventory | 1,930.00 | Ending inventory | 1,958.00 |
| Repairs to sprayer | 185.20 | | |
| Spray gun | 35.00 | | |
| Hose and hose repairs | 24.50 | | |
| Pressure gauge | 17.00 | | |
| Repair parts | 48.00 | | |
| Tires and tubes | 47.00 | | |
| Other repairs | 91.00 | | |
| 436 gal. gasoline | 85.68 | | |
| 10 gal. oil | 13.32 | | |
| 1 gal. transmission oil | 1.80 | | |
| Insurance | 26.00 | | |
| Use of buildings | 40.00 | | |
| 143 hr. man labor | 75.76 | | |

The hay equipment was used only on the hay crop. The spray record indicated that 361 tanks were used in the apple orchard, 18 for sour cherries, 8 for peaches, 15 for pears, and 10 for the young, non-bearing orchard.

5. The cropland record for Farm 25 is presented below. Prepare a ledger account for this record; list the debits and credits which should be included in the account; and close the account, assuming that all of the land was of about the same quality and value.

## CROPLAND RECORD, FARM 25

| Debits | | Credits | |
|---|---|---|---|
| Beginning inventory 146 acres | $19,456.00 | Ending inventory 146 acres | $19,456.00 |
| Sodium arsenate (tree killer) | 16.00 | | |
| Taxes * | 651.48 | Crops grown: | |
| Work repairing drains, clearing land: | | Corn — 40 acres | |
| 169 man hr. | 90.04 | Beans — 36 acres | |
| 15 horse hr. | 3.46 | Wheat— 50 acres | |
| 2 tractor hr. | 2.00 | Hay — 20 acres | |
| 6 truck miles | .78 | | |
| 32 auto miles | 3.20 | Total 146 acres | |
| New drains | 10.40 | | |

* Includes all taxes for the farm. The inventory value of the cropland was $19,456; orchards, $24,896; other land, $4,000; and buildings, $10,016. Compute the share of taxes for cropland according to percentage it forms of the total inventory value of all land and buildings.

6. If the 20 acres planted to hay crops were valued at $100 per acre and the remaining cropland at a much lower rate, what would be the

land costs per acre for the most valuable land and the remaining cropland? (Assume that all expenses were applied equally to all cropland.)

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CHAPTER 18

# Closing and Using Farm Cost Accounts

In general accounting terms, closing an account means completing the record so that the debits and credits balance or check out to the same total. For the service accounts of a complete system of farm cost accounts, such as labor, equipment, and cropland, this is done by closing these items at cost. The accounting operations required for these accounts are: to list on the credit side of the ledger the method to be used in distributing the costs; second, to compute the proportionate share of the total debits (or net debits if some credit items such as an equipment sale are in the account) which should be charged to each productive account; and the final step is to list each of these determined shares as credits to the service account and debit each productive account with its established share of the total costs of the account.

After all the service accounts are closed at cost and the values transferred to the productive accounts, the remaining accounts are closed to profit or loss. This is accomplished by computing the net gain or loss for each productive account, debiting the amount if it is a gain or crediting the value if it is a loss, and transferring this net difference to the proper side of the ledger of the gain or loss account. This procedure makes each of the productive accounts balance and leaves as the only remaining accounts to be closed the gain or loss account and the net worth account. The gain or loss account is closed by comparing the total debits (losses from the individual productive accounts) with the total credits (gains from other productive accounts) and recording the net difference on the credit side of this ledger, if it is a net loss for the year, or on the debit side of the gain or loss ledger if a net gain occurred for the year. This net gain or loss

for all operations is transferred to the net worth account; if it is the same amount as the previously determined change in net worth which was established when the ending inventory was recorded, this final account is closed, the books check, and the record is complete.

The accounting methods used in closing a double-entry bookkeeping system are the same regardless of whether the records are a system of complete farm cost accounts or are cost accounts of any other type of business. For farm cost accounts, however, the objective is not only to make the accounts balance and show the net gain or loss, but also to prepare a detailed summary of the year's business so that it can be studied from the point of view of improving the efficiency of each enterprise and of the farm as a whole. Therefore, in closing each account, care should be taken that sufficient detail is recorded relative to physical quantities, dates of major changes, weather variations, and the like, so that a complete study of each part of the business can be made.

Closing farm cost accounts is more difficult than setting up and keeping the records, and much intelligent judgment as well as mechanical ability is required to handle the accounts. Closing out the account is a check for accuracy as well as a method of summarizing the record for the year. Many farmers, regardless of their years of experience in keeping the simpler farm records, will have difficulty with this task. When this is true, it would be better to seek the advice of a local bookkeeper or commercial accountant rather than to discard the books as useless. As the usual farm cost accounting system is merely an adaptation of the typical double-entry bookkeeping method with the elimination of the journal and in some cases the cash account, any individual thoroughly familiar with double-entry bookkeeping methods should be able to find and solve the difficulties once the variations in the system are explained.

## General Procedure in Closing the Accounts

A general procedure for closing a complete set of farm cost accounts is as follows:

1. *Close All Accounts Which Are Complete.* At the end of the accounting period, after the ending inventories have been made

and recorded in the net worth account, the first step in the closing process is to close all accounts that are complete and that need no adjustments and to transfer all physical records to the proper ledger accounts where estimates or allocations are to be made. Accounts such as cash, accounts receivable, accounts payable, and feeds and supplies can be closed immediately or balanced without any further adjustments if kept properly throughout the year. If the cash account does not balance, the difference usually is caused by unaccounted-for cash expenses of a personal nature which are very difficult to keep accurately. To solve this problem an additional credit to the cash account for "unaccounted-for cash" should be made and this amount debited to personal expenses or to both personal and general farm expenses. Accounts such as general expenses, interest, tractor, house, and barn, cannot be closed immediately but should be completed partially at this time by recording on the credit side of each ledger the basis to be used in allocating these service accounts. Also, productive accounts, such as cows, hens, hay, and garden, cannot be closed immediately but should be completed in part by estimating the amount used by the farm family and hired labor, and lists of all physical quantities of feed, milk, and eggs produced, and similar items.

2. *Compute All Rates Needed for Allocation Purposes.* The second major step in the closing process is to prepare the remaining service or non-productive accounts by determining all rates that are needed for allocation purposes. The cost per unit for man labor must be computed from the total debits of the labor account and from the work hours listed in the physical labor record. Only after this step is completed can the labor account be closed. Similar rates for allocation purposes must be computed for the workstock account, tractor record, and other records for such items as trucks and automobiles. In addition, rates for the distribution of electricity costs, telephone expenses, and for the distribution of feed purchased and produced and other similar items must be established or estimates listed as to the method of allocation before these accounts can be completed.

3. *Close All Service Accounts.* The non-productive or service accounts act as a clearinghouse for the distribution of the indirect

costs to the different productive enterprises. Each of these service accounts must be closed before the net gain or loss on any of the productive enterprises can be determined. These accounts are closed by establishing the method of allocation, determining the rates for the distribution, and then crediting the accounts with the respective charges to each of the productive records; at the same time each item is cross-entered as a debit to the productive account affected. The most difficult single job in the closing of farm cost accounts is the determination of reasonable rates for use in distributing the indirect expenses. This operation requires careful judgment and the realization that although any basis used is likely to be faulty in some respects, the final allocation should be made as carefully as possible under the existing conditions on the farm.

4. *Close the Productive Accounts.* The various productive accounts, which are actually a series of enterprise accounts for each part of the farm business, supply the farmer with the most important information that is obtained from a series of farm cost accounts. All of the work in keeping the records throughout the year and the preliminary steps in closing the records is done only to obtain this final result, which is an accurate picture of the total cost and return for each productive farm enterprise. Each of these enterprises is closed by computing the total debits and total credits, determining the difference between these two totals, which is the profit or loss on the enterprise; this difference then is recorded as a credit to the enterprise and as a debit to the gain or loss account, if it is a loss, or as a debit to the enterprise and as a credit to the gain or loss account, if it is a gain. After each of the productive accounts has been closed in this manner, the gain or loss account furnishes a brief but complete summary of the profits or loss from each enterprise and the returns from the business as a whole for the year. The entire system of records is kept and closed to obtain this one page of information; the details recorded with each enterprise are used to find out why each enterprise had a gain or loss and how the enterprise can be improved in the future. The closing process is completed by transferring the net gain or loss from the gain or loss account to the net worth account. This final step closes the net worth ac-

count and is a check on the accuracy of making all the closing entries.

The specific operational steps in closing the typical system of farm cost accounts are:

A. First close the cash, accounts receivable, accounts payable, and feeds and supplies accounts.

B. Close the general expense account, debiting each account with its part of the general expenses and crediting the general expense account with a like amount.

C. Compute interest costs for all enterprises which have beginning and ending inventory values, debiting the interest cost to the individual account and crediting it to the interest record. Use the prevailing long-time interest rate for the region in determining the interest costs for these capital items.

D. Close the operator's house account and any other accounts that have transfer items to be debited to labor by debiting the labor account with these costs and crediting the individual accounts closed. In some cases, preliminary labor rate estimates must be made before these accounts can be closed.

E. Close the labor account by computing total costs of labor and allocating these costs to the different enterprises or accounts at the average cost per hour. Credit the labor account with each debit for labor charges made to the other accounts. Special or piecework labor used by only one enterprise should be cross-entered directly to that enterprise and not included in the average cost per hour computations.

F. Close the auto, truck, barn, cropland, pasture, horses, equipment, and other non-productive or service accounts in the same manner, crediting each account with the cross-entered charges made to the productive records.

G. Compute short-time interest costs by applying the prevailing short-time interest rate to each account in accordance with the amount of time the money for operating costs was used by the enterprise or account. List these interest charges as debits to the individual productive account and as credits to the interest account.

H. Close the interest account and each of the productive accounts by computing the net gain or loss and cross-entering this item to the gain or loss account. List each gain as a debit to the productive account and as a credit to the gain or loss account. List each loss as a credit to the productive account and as a debit to the gain or loss record.

I. Close the gain or loss account by computing the net gain or loss for the farm and transferring it to the net worth account. If this net gain or loss is the same as the difference in the net worth at the beginning and at the end of the year, the net worth account will balance and the record is complete.

## The Use of Farm Cost Accounts

1. *Kind of Data Available.* The facts available from a complete group of farm cost accounts for a year's business may be divided into four major categories. First, farm cost account records provide a detailed farm inventory or balance sheet at the beginning and the end of the accounting period. These inventory records have the same uses and adaptations of the simpler inventory records discussed in Chapters 4 and 5 and, in addition, because of the more complete and detailed summary, provide supplementary facts for the study and reorganization of the capital structure of the farm business. Second, farm cost account records will supply an operating statement or summary of costs and returns for the farm business as a whole, indicate the amount earned by the operator for his year's work, and point out each of the sources of income and expense. This operating statement summary has the same values and uses as the cash account or accrual accounts which were discussed in Chapters 8, 9, and 10. Third, farm cost account records will give the exact costs and returns for each of the productive enterprises on the farm with detailed quantities and values. A farm cost account system is actually a series of enterprise accounts on every part of the farm business and the completed records supply a picture of each enterprise for use in analysis and planning similar to the indicated uses of a single enterprise account as discussed in Chapters 14 and 15. Fourth, a complete system of farm cost accounts will supply the detailed unit costs for each of the nonproductive or service enterprises on the farm such as the truck, tractor, pasture, cropland, workstock, and labor records. From this information, facts can be obtained for use in improving the efficiency of the many service enterprises on the farm.

2. *Uses by Farmers Keeping the Records.* Since farm cost accounts furnish all the data supplied by the many different simpler records, they can be and are used in the same way as other records in preparing credit statements, developing a simple budget of receipts and expenses, filing an income tax return, and other similar uses. In addition, farmers keeping complete cost accounts have a more accurate basis for making adjustments

from year to year according to changes in costs and returns from the different enterprises and shifts in the relative importance of the different cost items. A cost account system supplies more of the facts needed in making a detailed and accurate plan or budget than any other system of records. It will assist in pointing out the relative efficiency of tractor compared to workstock power, the comparative costs of producing or of purchasing livestock replacements, the difference in per-acre and per-hour net returns between the bean and the corn enterprise, and many other similar items of information.

3. *Uses by Other Groups.* The importance of reliable farm cost account data has been recognized in some states by the establishment of a permanent farm cost accounting research project as part of the regular experiment station research program of the College of Agriculture. In these research projects, the state provides field men to contact interested farmers, set up the desired system of records on each farm, train the farmers in the best methods for keeping the records, visit them several times during the year to assist them in special problems, and assist them in closing and analyzing the books at the end of the year. In return for this assistance, the cooperating farmers permit the results of their records to be published in summary form and used by study groups and others interested in trends in farm costs and returns for the area.

Farm cost account data in these areas supply the major source of comparative returns over a period of years and the most important source of relative returns from the same farms from year to year. They are very useful as a check on other farm management work and as a valuable source for obtaining the average physical quantities and labor requirements for the different enterprises of a region. In addition, such data are helpful in determining unit costs for farm production items such as tractor use, building costs, labor and workstock costs, and cropland and pasture costs. These facts are needed to assist other farmers in the region in estimating unit costs in keeping the simpler single enterprise accounts and in developing more accurate farm plans. Also, farm cost account data are useful in teaching and research programs and in planning legislative programs or production adjustments.

4. *Precautions to Be Observed in the Use of Cost Account Data.* Farmers who keep a system of complete farm cost accounts are better-than-average farmers, operate better-than-average farms, and have higher-than-average training in agriculture; only the better farmers on the more profitable farms will keep the detailed daily records necessary to the system. Although this fact may not affect the relative comparison between different enterprises in any one year or over a period of years, it will affect the general level of costs and returns. Thus, the returns from cost account farms should not be considered as the average for the region; such returns are an indication of what the better producers in the region are doing. Also, the number of accounts kept in any one state and in any one region of a state are likely to be inadequate in reflecting the wide variations in the type of farming or in indicating reliable cost and return information on many of the less important enterprises.

Unless cost account data are understood thoroughly, including the methods used in keeping the records and the allocation procedures involved in closing the accounts, there is likely to be some false interpretation of the results. The most frequent points of misunderstanding are:

A. Often, the significance of the gain or loss in a given account in the system is misunderstood. Many of the costs of production on a farm are overhead costs which were incurred previous to the establishment of a given enterprise or system of farming. Investments in buildings, machinery, and cropland, for instance, will remain idle if not used for some enterprise. Thus, it may be good business under certain conditions to use these capital items for a given enterprise even at a loss rather than to let them remain idle and, in so doing, incur a larger loss. Similarly, it may be profitable to use certain cropland for an enterprise, even though relatively low returns are obtained, if it will cause otherwise idle land, labor, or machinery to be utilized. For the farmer who employs no hired labor, a return for labor of only 20 cents per hour for a certain enterprise may seem low when the average labor cost in the region is 40 cents, but since he applied his time to the enterprise rather than remaining idle this relatively low return resulted in greater total profits for the farming system.

B. Many of the costs of production are indirect costs and the full costs of production are not apparent until these have been allocated. In spite of the greatest care and accuracy in keeping the records, some of the indirect costs must be apportioned arbitrarily. Therefore, the farmer must make some allowance for the accounting methods used before he develops a farm management program based on minor differences in the

results. The usual accounting procedure in determining cropland costs is to charge each crop with its equivalent per-acre share of the total costs for the cropland. In some rotations, however, it is necessary to grow certain crops even at a loss in order to build up the land for maximum production of the more profitable enterprise. Therefore, not only should the net gain or loss from the enterprise be considered, but also the importance of the enterprise in the rotation.

C. The transfer at local farm prices of products used on the farm tends to favor the account using a marketable product. For instance, a farmer might continue to produce hay for his own dairy herd even though the cost of production was higher than the price at which he could sell the hay; if he purchased the hay for the dairy herd, he would have to pay slightly higher prices for the same quality because of the added costs of transportation and marketing.

D. The most important measure of return for the different enterprises, the return per hour of labor, is reliable and useful only if the amount of labor used on the enterprise as well as the actual return per hour of labor is considered. A hay enterprise may show a return of $2.00 per hour of labor as compared with only 50 cents per hour for corn, but the hay still may not be the better enterprise of the two if only 100 hours of work on the hay enterprise were possible during the year as compared with 1,000 hours for the corn enterprise.

E. Many differences exist between farms and between enterprises which cannot be measured by usual methods of accounting in terms of dollars and cents. The best that any system of accounting can do for any business is to present a clear-cut picture of what happened. The detailed interpretation of the accounts will depend upon local conditions, which change from day to day; upon the individual farm, which is different from other farms; and upon the farmer himself.

## EXERCISE 18

1. Close the farm cost account system of Farm 24 as developed in Exercise 16 according to the following procedure:
   (*a*) Compute interest costs for all enterprises which have beginning and ending inventory values. Debit the interest cost to each individual account and credit it to the interest account. Use 5 per cent as the long-time interest rate for these computations.
   (*b*) Close the "general expense" account by debiting each account with its part of the general expenses and crediting the general expense account.
   (*c*) Close the "operator's house" account by debiting the "labor" account with the costs of the house and crediting the operator's house account with a like amount.
   (*d*) Close the labor account by computing total costs of labor and allocating these costs to the different productive accounts at the

average cost per hour. Debit each individual account with the proportionate labor costs and credit the labor account with the same amount.

(*e*) Close the barn, cropland, pasture, truck, horses, and equipment accounts in the same manner, crediting each account with the individual charges made to the productive accounts.

(*f*) For the crop accounts compute the current interest costs by applying an average interest rate of 2 per cent (6 per cent annual charge but used only one-third of the year) to the total costs other than interest. List these interest charges as debits to the different crop accounts and as credits to the interest account.

(*g*) Close the interest account and each of the productive accounts by computing the net gain or loss and transferring this item to the gain or loss account. List each gain as a debit to the productive account and as a credit to the gain or loss account. List each loss as a credit to the productive account and as a debit to the gain or loss account.

(*h*) Close the gain or loss account by computing the net gain or loss for the farm and then transferring it to the net worth account. If this net gain or loss is the same as the difference in net worth at the beginning and at the end of the farm year, the net worth account will balance and the record is complete.

2. Compute the return per hour of labor for:
   (*a*) Cows
   (*b*) Heifers
   (*c*) Hay
   (*d*) Oats
   (*e*) Potatoes
3. List the indicated strong and weak points of each of these five productive enterprises and suggest ways of improving each of the weak points listed.

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